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**CAREER
and UNIVERSITY
COMMUNITY COLLEGE
OUTLOOK
ARTS AND SCIENCES**

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Manpower and Immigration Main-d'œuvre et Immigration



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1. I am a(n) Educator Counsellor Employer
 Student (year of study)
 Other
- 2(a). I use this publication for information concerning....
 Programs of study available, location and treatment
 All related career descriptions resulting from these programs
 The labour market situation and average starting salaries
 Preceding study areas at the secondary level
- (b). I would like to see more information concerning....

3. For my purposes (as stated in 2(a)) this publication is
 Very Useful Fairly Useful Not Useful
4. I found the information appearing in Written and/or Chart form to be the more helpful

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**CAREER
and UNIVERSITY
COMMUNITY COLLEGE
OUTLOOK
ARTS AND SCIENCES**

73

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Ottawa, 1973
MP 32, 2/9 - 1973

MESSAGE FROM THE MINISTER

I am sure you realize that no longer is a university or college degree a sure passport to a job. However, this is no reason to drop out rather than strive for a higher education. Indeed, very rapid technological change and the fastest growing labour force of any Western industrialized country, resulting in an increasingly competitive environment, make it all the more important for you to pursue further education beyond the high school level. Certainly, those with higher qualifications will have a better chance of obtaining employment which is rewarding and commensurate with their ability.

Two levels of higher education readily available to you are provided by the university and community college. They have expanded rapidly over the past few years and they offer a rich variety of courses based upon, and responsive to, the present and future needs of an expanding labour market. Employers have a high regard for their graduates.

Thus, career alternatives are many and varied. This booklet provides you with information about them. It is designed to make you aware of the career opportunities which are available through the universities and community colleges and should help you to make a very important decision.



Robert Andras,

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General Information

Community College and University

1

To Guidance and Counselling Personnel

This book is provided as a first step in career counselling. It is not intended to be a final answer. Once it has been used to determine the student's interest area, in-depth research in the particular field will be needed. You, as guidance personnel, will be called upon to show the student where further information can be found.

To The Student

In designing this publication for your use, it was decided to give you basic information with which to begin your career search. Further work and study on your part will be necessary to determine the specifics of your chosen field of study and your career area on graduation. This publication is only one of a number of student employment information services. Use it wisely, and good luck.

Remember, the written copy in this publication relates to career opportunities and gives a general description for career orientation. The tables at the end of each section show a listing of what each of Canada's post-secondary institutions offer in courses leading to a specific degree or diploma under the section heading.

To obtain further information on the degree or diploma, you should write the Registrar or Director of Admissions of the particular institution in which you are interested. For additional information on a career or job area, you should discuss future plans with a guidance officer, teachers, people already employed in the area that is of interest, counsellors and parents.

How Long Will it Take to Reach Your Particular Goal

At community colleges, most courses are two years in length. Some more specialized courses take three years and a recent trend is to develop one year courses in some skill fields.

Most universities in Canada have a four-year program leading to a bachelor's degree. However, some of our academic institutions offer different programs. At a number of universities one can obtain a three-year general degree which is a good, sound education. Few, if any, of these degrees qualify one for employment in professional fields.

Other universities offer a bachelor's degree, after four or five years of study, giving the student deeper insight in a specialized degree area such as history or chemistry.

In Quebec, degrees are granted in three years after completion of a two-year (arts or science) program in a public college (CEGEP) which brings the full degree to five years of post-secondary school studying.

Masters' degrees vary in length but usually 18 months to two years is the time involved. Doctorates in any given subject are two to five years of study after a master's degree. Applications for special consideration in the post graduate field must be discussed carefully by the student with the particular school in question.

How Much Will Your Post-Secondary Education Cost

The cost of a university education will change greatly from university to university and even from discipline to discipline and may vary from \$1,200 to \$2,500 per year. For instance, medicine is one of the more costly fields of study while a general arts degree is considerably less expensive. At the community college level, four provinces: Quebec, New Brunswick, Nova Scotia, Newfoundland, have no tuition charge. The remaining community colleges have tuition fees up to \$200 per year. Expenses which should be considered are: tuition, residence costs, laboratory costs, student union fees, books, and individual spending habits.

Although cost is sometimes a frightening aspect of continuing education, each province has set up financial programs. Along with scholarships, bursaries, fellowships, grants and awards, the provincial organizations for financial help bring university well within the reach of any capable Canadian student. The table lists sources of provincial financial aid.

For information on loans write to the following addresses:

| | |
|---|---|
| NEWFOUNDLAND Canada Student Loans Authority | Department of Education Confederation Building St. John's, Newfoundland |
| PRINCE EDWARD ISLAND Canada Student Loans Committee | Department of Education Charlottetown, Prince Edward Island |
| NOVA SCOTIA Nova Scotia-Canada Student Loans Committee | Department of Education Box 578 Halifax, Nova Scotia |
| NEW BRUNSWICK Department of Youth | Fredericton New Brunswick |
| *QUEBEC Student Aid Service | Department of Education Gov't. of the Province of Quebec Quebec City |
| ONTARIO Department of College and University Affairs | Student Awards Officer Suite 700 481 University Avenue Toronto 2, Ontario |
| MANITOBA Department of Education | Student Aid Officer 1181 Portage Avenue Winnipeg 10, Manitoba |
| SASKATCHEWAN Department of Education Avord Tower | Victoria Ave. & Hamilton St. Regina, Saskatchewan |
| ALBERTA Student Assistance Board | Department of Education Administration Building Edmonton, Alberta |
| BRITISH COLUMBIA The British Columbia Student Aid Loan Committee | c/o Department of Education Victoria, British Columbia |
| YUKON TERRITORY The Student Financial Assistance Awards Committee | c/o Superintendent of Schools Box 2703 Whitehorse, Yukon Territory |
| NORTHWEST TERRITORIES Superintendent of Education for the Northwest Territories | c/o Education Division Department of Indian Affairs and Northern Development 400 Laurier Avenue, W. Ottawa, Ontario |

*The Province of Quebec relies on its own student assistance scheme instead of participating in the Federal plan. Accordingly, students who are residents of the Province of Quebec can apply for financial assistance to the Student Aid Service.

Employment

Several factors should guide the employment oriented student entering post-secondary education

Approximately 150,000 students graduated from Canadian community colleges and universities in 1972. There were 75,000 community college graduates, 70,000 at the bachelor's level, 10,000 masters and close to 2,000 doctoral graduates.

The changing definition of what constitutes a university or community college student, makes it difficult to assess trends and enrollments unless one looks at the overall totals of post-secondary students. This total increased by almost 12 percent, from nearly 430,000 in 1971-72 academic year to 480,000 in 1971-1972. The 1971-1972 figure included about 310,000 university students and about 170,000 community college students.

In the short (and to a lesser extent the medium) run, educational output or the supply of highly qualified manpower is already fixed. The reason is because this potential manpower is already in the various educational streams and will be coming on the labour market in the next year or two. The present labour market will not absorb all the graduates without difficulty. In the medium and long runs, however, the demand for highly educated manpower is going to continue to increase, as the tasks of society become increasingly complex and as technological advances continue. It should be noted that the number of jobs in the professional and technical occupations rose by half a million between 1957 and 1970. This trend is expected to continue.

The long-term trend of occupational employment for Canada has been that of a faster increase in the professional, technical and managerial occupations than the average increase in employment in all occupations.

What is not certain at this point, however, is how supply will adjust to the altered labour market situation. Even though projections indicate a continued expansion, it is possible that in several fields of study the demand for higher education may taper off, as students get discouraged at the prospects of employment. Other areas may increase. People are very concerned about their ecological survival, about the provision of social services to the underprivileged of our country, about the need for increased international aid for developing nations, and also the need for better use of free time for recreation purposes.

Perhaps the high school graduate today should consider expertise in some of these fields, not instead of, but along with their consideration of the more traditional fields like law, teaching and engineering.

Summer Employment

On Campus placement services personnel point up the high correlation between gainful summer employment and the acquiring of positions on graduation. Summer employment in the student's field of study is best, but good practical experience in any field is a great asset for the new graduate on the employment market.

In recent years, the influx of large numbers of students seeking summer jobs has become a regular characteristic of Canada's summer labour force. There are over one million students from high school and all post-secondary institutions looking for employment each summer. Although many are successful; regionally, disparities still exist. For instance, in 1971 the Quebec and Atlantic regions had the highest student unemployment rates. These regional disparities are expected to continue though Federal Government programs contribute to a reduction of these inter-regional differences.

In the summer of 1971 students of community colleges worked an average of eleven weeks. The table shows not only average gross earnings but their savings as well. These figures will act as a guide to earning powers for the community college students next summer.

During the summer of 1971 university students worked one week more on the average than the previous year. The accompanying chart shows their gross earnings as well as their savings for that period and gives an indication of savings for students in relation to their earnings.

| PROVINCE OF STUDY | AVERAGE GROSS EARNINGS FROM SUMMER WORK | | | AVERAGE SAVINGS FROM SUMMER WORK | | |
|----------------------|--|--------|-------|--|--------|-------|
| | Male | Female | Total | Male | Female | Total |
| Newfoundland | 810 | 620 | 750 | 335 | 235 | 305 |
| Prince Edward Island | 940 | 560 | 785 | 320 | 305 | 315 |
| Nova Scotia | 1000 | 655 | 865 | 525 | 360 | 465 |
| New Brunswick | 1050 | 665 | 910 | 515 | 405 | 475 |
| Québec | 1090 | 775 | 995 | 555 | 435 | 520 |
| Ontario | 1300 | 745 | 1110 | 700 | 460 | 615 |
| Manitoba | 1360 | 795 | 1145 | 645 | 410 | 555 |
| Saskatchewan | 1395 | 720 | 1155 | 690 | 455 | 605 |
| Alberta | 1625 | 830 | 1340 | 750 | 445 | 640 |
| British Columbia | 1570 | 880 | 1330 | 920 | 535 | 785 |

| PROVINCE OF STUDY | AVERAGE GROSS EARNINGS FROM SUMMER WORK | | | AVERAGE SAVINGS FROM SUMMER WORK | | |
|----------------------|--|--------|-------|--|--------|-------|
| | Male | Female | Total | Male | Female | Total |
| Newfoundland | 785 | 380 | 730 | 310 | 190 | 295 |
| Prince Edward Island | — | — | — | — | — | — |
| Nova Scotia | 640 | 400 | 590 | 225 | 170 | 215 |
| New Brunswick | 685 | 530 | 635 | 225 | 315 | 255 |
| Québec | 705 | 485 | 625 | 360 | 255 | 325 |
| Ontario | 1030 | 495 | 920 | 440 | 265 | 405 |
| Manitoba | 805 | 510 | 770 | 330 | 225 | 315 |
| Saskatchewan | 770 | 440 | 690 | 360 | 245 | 330 |
| Alberta | 965 | 635 | 895 | 440 | 300 | 410 |
| British Columbia | 1250 | 635 | 1070 | 605 | 335 | 520 |

**STARTING SALARIES FOR COMMUNITY COLLEGE STUDENTS GRADUATING
IN THE YEARS 1970 to 1972**
(Dollars per Month)

| Discipline | Students Graduating in 70 | Students Graduating in 71 | Students Graduating in 72 |
|-------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Commercial | | | |
| Accounting and Financial Management | 495 | 505 | 525 |
| Business Administration | 505 | 490 | 495 |
| Computer Programming | 520 | 545 | 565 |
| Industrial Management | 535 | 550 | 550 |
| Marketing and Retailing | 515 | 530 | 545 |
| Secretarial Science | 370 | 420 | 480 |
| Applied Arts | | | |
| Journalism | 540 | 530 | xxx |
| Library | 400 | 520 | 520 |
| Nursing | 455 | 490 | 490 |
| Recreation | 490 | 495 | xxx |
| Social Service | 480 | 540 | 600 |
| Technologies | | | |
| Agricultural | 480 | 450 | 440 |
| Architectural | 520 | 550 | xxx |
| Biochemistry | 500 | 545 | 600 |
| Chemical | 535 | 545 | 545 |
| Civil | 535 | 545 | 545 |
| Drafting | 455 | 485 | 480 |
| Electrical | 550 | 565 | 570 |
| Electronic | 505 | 545 | 545 |
| Food | 445 | 450 | xxx |
| Forestry and Forest Products | 530 | 565 | xxx |
| Gas, Oil, Petroleum | 530 | 575 | 610 |
| Instrumentation and Control | 575 | 570 | 645 |
| Mechanical | 540 | 560 | 565 |
| Medical Laboratory | 440 | 505 | 520 |
| Medical Radiological and X-Ray | 440 | 520 | 515 |
| Metallurgical | 555 | 570 | 580 |
| Mining | 635 | 605 | 595 |
| Survey | 530 | 505 | xxx |

The starting salary rates which appear in the accompanying table were derived from surveys of employers of new community college graduates throughout the country. These are average starting salaries and individual graduates frequently receive significantly different starting salaries than those in the table. These differences are often the result of such factors as the geographic location and individual characteristics of the employer or of the new graduate.

The figures reported are national averages covering all types of employment for graduates in a particular discipline. Where related courses in one discipline are offered, such as one-, two- or three-year courses, the rates for graduates of the longer course have been used. The figures for 1970 and 1971 are actual while the figures for 1972 are estimated.

AVERAGE STARTING SALARIES FOR UNIVERSITY STUDENTS GRADUATING IN 1971 and 1972
(Dollars per Month)

| DISCIPLINE OF STUDY | BACHELOR DEGREES | | | | GRADUATE DEGREES | | | |
|--------------------------------------|------------------|-----|---------|-----|------------------|------|---------|------|
| | Pass | | Honours | | Masters | | Doctors | |
| | 71 | 72 | 71 | 72 | 71 | 72 | 71 | 72 |
| Arts: | | | | | | | | |
| All Fields | 535 | 570 | 580 | 610 | 725 | 750 | 955 | 980 |
| Economics | 550 | 595 | 600 | 625 | 740 | 750 | 1040 | 1065 |
| Geography | 540 | 590 | 600 | 600 | 675 | 675 | 885 | 920 |
| History | 520 | — | 570 | 620 | 720 | 700 | 950 | 970 |
| Industrial Relations | — | — | 580 | 650 | 680 | 700 | — | — |
| Language and Literature | 520 | 620 | 570 | 640 | 730 | 790 | 920 | 900 |
| Political Science | 540 | — | 565 | 620 | 720 | 750 | 925 | 925 |
| Psychology | 505 | 545 | 510 | 565 | 775 | 785 | 970 | 1080 |
| Sociology | 565 | — | 565 | 635 | 745 | — | 935 | 975 |
| Science: | | | | | | | | |
| All Fields | 600 | 615 | 655 | 675 | 740 | 750 | 940 | 955 |
| Biological Sciences | 555 | 585 | 635 | 605 | 675 | 675 | 920 | 910 |
| Chemistry | 655 | 635 | 695 | 700 | 815 | — | 955 | 950 |
| Computer Science | 605 | 605 | 630 | 650 | 705 | 780 | 985 | — |
| Geology | 650 | 690 | 685 | 700 | 775 | 780 | 930 | 980 |
| Geophysics | — | — | 690 | 690 | — | 810 | — | — |
| Mathematics | 580 | 603 | 660 | 675 | 740 | 750 | 1000 | 1040 |
| Physics | 590 | — | 640 | 640 | 675 | — | 900 | — |
| Commerce and Business Admin.: | | | | | | | | |
| All Fields | 605 | 625 | 830 | 860 | 1110 | 1110 | 1110 | 1185 |
| Accounting Majors | 620 | 645 | — | — | — | — | — | — |
| Commerce and Bus. Admin. | 610 | 635 | 850 | 895 | — | — | — | — |
| Employed as C.A. Students | 605 | 615 | 685 | 690 | — | — | — | — |
| Engineering: | | | | | | | | |
| All Fields | 680 | 700 | 775 | 780 | 980 | 980 | 1030 | 1030 |
| Chemical | 675 | 655 | 760 | 760 | 1030 | 1030 | — | — |
| Civil | 690 | 695 | 785 | 800 | 1050 | 1050 | — | — |
| Electrical | 675 | 690 | 765 | 780 | 950 | 950 | 1000 | 1000 |
| Industrial | 685 | 700 | — | — | — | — | — | — |
| Mechanical | 685 | 740 | 775 | 780 | 995 | 995 | 1040 | 1040 |
| Metallurgical | 700 | 715 | 775 | — | — | — | — | — |
| Mining | 735 | 730 | — | — | — | — | — | — |
| Other Fields of Study: | | | | | | | | |
| Agriculture | 600 | 630 | 685 | 755 | 980 | 980 | 1030 | 1030 |
| Architecture | 680 | 695 | — | — | — | — | — | — |
| Education | 640 | 680 | 850 | 850 | 1065 | 1065 | 1155 | 1155 |
| Forestry | 685 | 750 | — | — | — | — | — | — |
| Home Economics | 665 | 700 | — | — | — | — | — | — |
| Law | 750 | 760 | — | — | — | — | — | — |
| Law (as articling students) | 435 | 425 | — | — | — | — | — | — |
| Library Science | 685 | 690 | 715 | 710 | — | — | — | — |
| Nursing | 585 | 595 | 815 | 835 | — | — | — | — |
| Pharmacy | 775 | 790 | — | — | — | — | — | — |
| Physical Education | 650 | 670 | 815 | — | — | — | — | — |
| Physiotherapy | 590 | 605 | — | — | — | — | — | — |
| Social Work | 640 | 720 | 820 | 800 | — | — | — | — |

The starting salary rates presented on the accompanying table are average starting salaries derived from surveys of employers of new university graduates. Individual graduates frequently receive significantly different rates than those in the table. Those differences are often the result of such factors as characteristics of the employer or new graduate and geographic location of the employment.

Rates for students obtaining pass or honours Bachelor's degrees are given for those in Arts and those in Science, whereas only one rate is given for students obtaining Bachelor's degrees in Engineering, Commerce and Business Administration or in other fields of study. Figures for 1971 are actual while 1972 figures are estimated by the above statement.

"On Campus" Counselling and Placement Service

With a major accent on youth and its real problems, our society has become very conscious of and spends a great deal of time and money in providing specialized services to youth. To this end, the Department of Manpower and Immigration and many universities and community colleges have united in an effort to aid youth and the employer to achieve satisfying efficient employment of the young people of Canada.

Most post-secondary campuses in Canada have provided their students with a Career Counselling and Student Placement service. The majority of these services are staffed and supplied in conjunction with the Department of Manpower and Immigration. Other offices are run privately by the institutions themselves. They all provide a three-stage service. Stage one is designed, through personal interview and campus contact, to build a resume on each student requesting this service.

Stage two is setting up an interview schedule with employers on campus, and stage three is further follow-up if the student does not find suitable employment under stage two.

As professional and technical demands increase, so increase the demands for qualified personnel in these areas. To assist in meeting this demand for Canada's youth, Student Placement Officers on campus provide several services. Through personal interviews, they assist the students to find a desired area of employment and then assist in finding part-time, summer, and most importantly, permanent employment, as far as possible, in these areas. So interference with studies is minimal, they accommodate both local and national employers for interviews "on campus". The office also provides direct name and address communication with employers who do not visit the campus. It also suggests other areas, sometimes of secondary interest, so that the student's opportunity is increased.

All Canada Manpower Centres on campus, private student placement offices, and local Canada Manpower Centres across Canada list job vacancies. Students should check these sources early in the academic year so that they have time to explore the opportunities that exist before graduation.

The placement office and the university faculty and its committees in recent years have developed a very close liaison. This greatly assists the placement office in being able to assess the needs of the student in the

employment area. It also has developed a strong link between industry and the university so that better understanding of the needs of the employment market is being developed by faculty. This often assists in the up-dating of courses and the invitation of industrial experts to give in-course seminars.

The Career/Placement service is able to give sound counselling in the career area. Much of the counselling material is provided by the Department of Manpower.

The Department, with a vital interest in improving its service and information to youth, augments its Canada Manpower Centres and the private placement services with several publications. These provide current information to both career counsellors and students, on labour market information, starting salaries of the current year, supply and demand for new graduates, listings of employers interested in hiring new graduates of post-secondary institutions, and other career information. The titles of the main publications are:

University Career Outlook

Community College Career Outlook

Supply and Demand of New University Graduates

Requirements and Average Salaries for New University Graduates

Requirements and Average Salaries for New Community College Graduates

Directory of Employers of New University Graduates

These publications are available at the Canada Manpower Centre on campus or at other Canada Manpower Centres.

Because of the highly competitive nature of today's labour market, it is suggested that students keep themselves very aware of the problems and trends in the employment market throughout the period of their post-secondary education. For those who wish employment following the final year of their studies, the search for a position should start early in the fall. All students are recommended to avail themselves of the services and information of the campus placement office so that they are able to have a complete picture of their employment opportunities.

To Parents and Students— A Thought on University Education

This year may well mark a significant change from an era of remarkable expansion in university education in Canada, which has gone forward without substantial pause since the late 1950's. The unexpected downward shift in the rate of increase in enrolments, which was not expected until later in the 70's, and the end of the post-war "baby-boom", may be an indication that many people—and particularly those of university age—are re-assessing the purpose and meaning of the university for them. I think this is healthy.

In recent years, much emphasis has been placed on a supposed correlation between earning a university degree and finding a satisfying job. I have never felt this relationship to be central to the university's responsibilities, nor do I feel that successful university work could or should be designed to guarantee a job.

The mission of the university in my view is to provide the milieu and resources which together offer the opportunity for students to develop their intellects for rigorous thought, through whatever academic disciplines they may find interesting while they are students, and also thinking ahead in varying degrees to their subsequent careers to offer opportunities for acquiring knowledge in areas related to possible future work and interests.

Today, much is made of the fact that a Bachelor's degree seems to be far from a guarantee of a job. Perhaps this is true, and some studies of occupational trends are indicating that it may well be the case in certain areas of work. But to view the university's function in this narrow way ignores the broader purpose of a university education, which is, simply put, to develop the capacity for rigorous thinking in those availing themselves of the opportunity. These studies also seem to suggest that after several years beyond the degree-earning age, those who have achieved a university degree tend to advance more quickly than those who have not. For me this confirms that the full value of university experience, both for the individual and for society, lies more in the asset of a trained mind which can be applied in diverse areas rather than as an admission ticket to a particular sector of the work world.

If a young person is especially concerned about a job on graduation, he should in many cases think of other institutions that are explicitly more directed at preparing their students for contemporary occupations. These can provide a satisfying and effective preparation for

those who do not wish to take part in the broader scope of the university approach, and who wish training closely related to a specific kind of job. Nor does my conception of the university's function suggest that a broad degree of mental growth cannot be achieved in other ways outside a university, ways which may be very satisfying for different people. As is coming to be recognized by more and more people, there is no reason that any one approach or mode of learning should exclude for all time any other approach or mode for any individual. People have changed and will continue to change their interests and aspirations during their lives; consequently they have changed or will continue to change the institutions or ways through which they seem to achieve their new goals.

This is as it should be in a complex and evolving world, and this is the context in which I see our universities continuing to play their part. For those who wish to benefit from the systematic development of their capacity to confront and deal with abstract thought and ideas, or who wish to go more deeply and rigorously into the processes of understanding one or more of the areas of knowledge which comprise the study of man, society, and nature; the universities should continue to provide the resources and opportunities. For those who wish to focus more directly on particular training or practical area, perhaps only for a particular period in their lives, other institutions or kinds of experience will be more appropriate.

It remains only to emphasize that while I do not see a university education as solely preparatory to work, I do not think the previous emphasis on career relevance should be discarded in an *over-correction*. The university should both continue to offer students the chance to understand their world and try to equip them better to take part in shaping its future along with their own. No easy task, but that is why universities can be such fascinating communities to many with searching minds.

A. D. Dunton
President and Vice-Chancellor
Carleton University
Ottawa, Canada
February, 1972

To Parents and Students – A Thought on Quebec CEGEPS

For a few years Quebec has been redefining its educational structures.

Principle studies undertaken are the Tremblay report on technical education, Parent Committee on general education, and the Rioux Committee on artistic education. In close relationship with these other important projects dealing with parallel education, let us foresee new developments in education.

It should be noted that all of these studies have brought about major changes as a part of the quiet revolution.

It can be said that nowhere in the world can be found a similar consciousness about pedagogy as in Quebec. The creation of universities and the reorganization of primary and secondary schools are examples of how all levels of education are being touched.

New for Quebec, and perhaps a completely new level in the educational system, the CEGEP's are innovators in more than one way. With the creation of the CEGEP's, the Quebec school system counts four distinct educational levels.

The CEGEP is mandatory as an intermediary step between secondary and university education. It is geared to the seventeen-to nineteen-year-old wishing to attend university or desiring a higher level of employment, and to adults who want to complete their professional training, depending on the labour market.

CEGEP is a system in which the function is to give for a certain area the valuable training which was formerly exclusively offered by the classical colleges, technical institutions, teacher's colleges, nursing schools, and schools of art.

These institutions are co-ordinated by the Director of General Education (DIGEC) and governed by public corporations formed by the Professional and Technical College Law (Bill 21), Province of Quebec. However, there are some private institutions giving courses at the same level and they are recognized by the DIGEC.

These structures are new in the Quebec education and administrative law. Like a school board, a CEGEP is a public corporation. However, the administration board is not voted directly by parents and citizens. Like a private institution, the CEGEP is relatively autonomous.

In its actual form, the administration council of a college is composed of 19 persons coming from social economic groups of the territory, professors, parents, students, the director general, and director of studies. Finally, the registrar or the general secretary of the college works as secretary of that same council, all helping to update Quebec's educational system with amazing rapidity.

Maurice Girard
Secretary General
College Du Vieux Montréal

List of Universities

The following is a complete list of the universities in Canada as found in the Tables of Studies at the end of each major section of this publication. The purpose of this list is to enable the reader to identify and locate each institution.

Newfoundland

Memorial University of Newfoundland St. John's, Nfld.

Prince Edward Island

University of Prince Edward Island Charlottetown, P.E.I.

Nova Scotia

Acadia University Wolfville, N.S.
Dalhousie University Halifax, N.S.
Mount Saint Vincent University Halifax, N.S.
Nova Scotia College of Art and Design Halifax, N.S.

Nova Scotia Technical College Halifax, N.S.
St. Francis Xavier University Antigonish, N.S.
St. Mary's University Halifax, N.S.

New Brunswick

University of Moncton Moncton, N.B.
Mount Allison University Sackville, N.B.
University of New Brunswick Fredericton, N.B.

Quebec

Bishop's University Lennoxville, Que.
Loyola of Montreal Montreal, Que.
MacDonald College Montreal, Que.
McGill University Montreal, Que.
Sir George Williams University Montreal, Que.
Laval University Quebec, Que.
University of Montreal Montreal, Que.
University of Québec (Campuses at Chicoutimi, Hull, Montreal, Quebec City, Rimouski, Rouyn, Trois-Rivières) Quebec, Que.
University of Sherbrooke Sherbrooke, Que.

Ontario

Brock University St. Catharines, Ont.
Carleton University Ottawa, Ont.
Lakehead University Thunder Bay, Ont.
Laurentian University Sudbury, Ont.
McMaster University Hamilton, Ont.
Ontario College of Art Toronto, Ont.
Queen's University Kingston, Ont.
Royal Military College Kingston, Ont.
Ryerson Polytechnical Institute Toronto, Ont.
Trent University Peterborough, Ont.
University of Guelph Guelph, Ont.

University of Ottawa Ottawa, Ont.
University of Toronto Toronto, Ont.
University of Waterloo Waterloo, Ont.
University of Western Ontario London, Ont.
University of Windsor Windsor, Ont.
Waterloo Lutheran University Waterloo, Ont.
York University Toronto, Ont.

Manitoba

Brandon University Brandon, Man.
University of Manitoba Winnipeg, Man.
University of Winnipeg Winnipeg, Man.

Saskatchewan

University of Saskatchewan (Regina) Regina, Sask.
University of Saskatchewan (Saskatoon) Saskatoon, Sask.

Alberta

University of Alberta Edmonton, Alta.
University of Calgary Calgary, Alta.
University of Lethbridge Lethbridge, Alta.

British Columbia

Notre Dame University Nelson, B.C.
Simon Fraser University Burnaby, B.C.
University of British Columbia Vancouver, B.C.
University of Victoria Victoria, B.C.

List of Community Colleges

12

The following is a complete list of community colleges in Canada as found in the Tables of Studies at the end of each major section of this publication. The purpose of this list is to enable the reader to identify and locate each institution.

Abbreviations used in
Tables of Study

Prince Edward Island

Holland College

Charlottetown, P.E.I.

Holland

New Brunswick

New Brunswick Institute of Technology
Saint John Institute of Technology

Moncton, N.B.
Saint John, N.B.

N.B.I.T.
S.J.I.T.

Nova Scotia

Nova Scotia Agricultural College
Nova Scotia Eastern Institute of Technology
Nova Scotia Institute of Technology
Nova Scotia Land Survey Institute
Southwest Community College

Truro, N.S.
Sydney, N.S.
Halifax, N.S.
Laurencetown, N.S.
Metaghagan, N.S.

N.S.A.C.
N.S.E.I.T.
N.S.I.T.
N.S.L.S.I.
Southwest

Newfoundland

College of Fisheries, Navigation, Marine
Engineering and Electronics
College of Trades and Technology

St. John's, Nfld.
St. John's, Nfld.

C.F.N.M.E.E.
C.O.T.T.

Quebec

Ahuntsic CEGEP
Andre Laurendeau CEGEP
Bois de Boulogne CEGEP
Champlain CEGEP
Chicoutimi CEGEP
Côte Nord CEGEP
Dawson CEGEP
Edouard-Montpetit CEGEP
François Xavier Garneau CEGEP
Gaspé CEGEP
Hull CEGEP
John Abbot CEGEP
Joliette CEGEP
Jonquière CEGEP
La Pocatière CEGEP
Lévis-Lauzon CEGEP
Limoilou CEGEP
Lionel-Groulx CEGEP
Maisonneuve CEGEP
Matane CEGEP
Montmorency CEGEP
Rimouski CEGEP
Rivière-du-Loup CEGEP
Rosemont CEGEP
Rouyn-Noranda CEGEP
Ste-Foy CEGEP
St-Hyacinthe CEGEP

Montreal 353, Que.
LaSalle 650, Que.
Montreal 355, Que.
Lennoxville and St. Lambert, Que.
Chicoutimi, Que.
Baie Comeau and Sept Iles, Que.
Montreal 215, Que.
Longueuil, Que.
Quebec 6, Que.
Gaspé, Que.
Hull, Que.
Montreal 215, Que.
Joliette, Que.
Jonquière, Que.
La Pocatière, Que.
Lauzon, Que.
Quebec 3, Que.
Ste-Thérèse-de-Blainville, Que.
Montreal 406, Que.
Matane, Que.
Ville de Laval, Que.
Rimouski, Que.
Rivière-du-Loup, Que.
Montreal 408, Que.
Rouyn, Que.
Quebec 10, Que.
St-Hyacinthe, Drummondville,
and Tracy, Que.

Ahuntsic
Andre Laurendeau
Bois de Boulogne
Champlain
Chicoutimi
Côte Nord
Dawson
Edouard-Montpetit
François X. Garneau
Gaspé
Hull
John Abbot
Joliette
Jonquière
La Pocatière
Lévis-Lauzon
Limoilou
Lionel-Groulx
Maisonneuve
Matane
Montmorency
Rimouski
Rivière-du-Loup
Rosemont
Rouyn-Noranda
Ste-Foy
St-Hyacinthe

| | | |
|---|---|------------------------------|
| St-Jean CEGEP | St-Jean, Que. | St-Jean |
| St-Jérôme CEGEP | St-Jérôme, Que. | St-Jérôme |
| St-Laurent CEGEP | Montreal 379, Que. | St-Laurent |
| Salaberry-de-Valleyfield CEGEP | Valleyfield, Que. | Salaberry-de- Valleyfield |
| | | |
| Shawinigan CEGEP | Shawinigan, Que. | Shawinigan |
| Sherbrooke CEGEP | Sherbrooke and Granby, Que. | Sherbrooke |
| Thetford Mines CEGEP | Thetford Mines, Que. | Thetford Mines |
| Trois-Rivières CEGEP | Trois-Rivières, Que. | Trois-Rivières |
| Vanier CEGEP | Montreal 379, Que. | Vanier |
| Victoriaville CEGEP | Victoriaville, Que. | Victoriaville |
| Vieux-Montréal CEGEP | Montreal 129, Que. | Vieux-Montréal |
| Institute of Marine Technology of Quebec | Quebec, Que. | I.T.M.Q. |
| Ontario | | |
| Algonquin College | Ottawa, Pembroke and Perth, Ont. | Algonquin |
| Cambrian College | North Bay, Sault Ste. Marie and Sudbury, Ont. | Cambrian |
| Centennial College | Scarborough, Ont. | Centennial |
| Conestoga College | Kitchener, Ont. | Conestoga |
| Confederation College | Thunder Bay, Ont. | Confederation |
| Durham College | Oshawa, Ont. | Durham |
| Fanshawe College | London 32, Ont. | Fanshawe |
| George-Brown College | Toronto 130, Ont. | George-Brown |
| Georgian College | Barrie, Ont. | Georgian |
| Humber College | Rexdale, Ont. | Humber |
| Lakehead College | Thunder Bay, Ont. | Lakehead |
| Lambton College | Sarnia, Ont. | Lambton |
| Loyalist College | Bellefontaine, Ont. | Loyalist |
| Mohawk College | Hamilton 40, Ont. | Mohawk |
| Niagara College | St. Catharines and Welland, Ont. | Niagara |
| Northern College | Haileybury, Kirkland Lake, Porcupine and Timmins, Ont. | Northern |
| Ryerson Polytechnical Institute | Toronto, Ont. | Ryerson |
| St. Clair College | Chatham and Windsor 22, Ont. | St. Clair |
| St. Lawrence College | Brockville, Cornwall and Kingston, Ontario | St. Lawrence |
| Seneca College | Willowdale 428, Ont. | Seneca |
| Sheridan College | Brampton, Mississauga and Oakville, Ont. | Sheridan |
| Sir Sandford Fleming College | Cobourg, Lindsay and Peterborough, Ont. | Sir S. Fleming |
| Centralia Agricultural College | Huron Park, Ont. | Centralia |
| Kemptville Agricultural College | Kemptville, Ont. | Kemptville |
| New Liskeard Agricultural College | New Liskeard, Ont. | New Liskeard |
| Ridgetown Agricultural College | Ridgetown, Ont. | Ridgetown |
| Manitoba | | |
| Assiniboine College | Brandon, Man. | Assiniboine |
| Keewatin College | The Pas, Man. | Keewatin |
| Red River College | Winnipeg 23, Man. | Red River |

Saskatchewan

Saskatchewan Institute of Applied Arts and Science
 Saskatchewan Technical Institute

Saskatoon, Sask.
 Moose Jaw, Sask.

S.I.A.A.S.
 S.T.I.

Alberta

Camrose Lutheran College
 Eastern Alberta College
 Fairview Agricultural and Vocational College
 Grande Prairie College
 Lethbridge Community College
 Medicine Hat College
 Mount Royal College

Camrose, Alta.
 Lloydminster and Vermilion, Alta.
 Fairview, Alta.
 Grande Prairie, Alta.
 Lethbridge, Alta.
 Medicine Hat, Alta.
 Churchill Park, Lincoln Park,
 and Old Sun, Alta.
 Edmonton 18, Alta.
 Red Deer, Alta.
 Calgary 41, Alta.

Camrose
 Eastern Alba.
 Fairview
 Grande Prairie
 Lethbridge
 Medicine Hat
 Mount Royal
 N.A.I.T.
 Red Deer
 S.A.I.T.

Northern Alberta Institute of Technology
 Red Deer College
 Southern Alberta Institute of Technology

British Columbia

British Columbia Institute of Technology
 Capilano College
 Cariboo College
 Douglas College
 Malaspina College
 New Caledonia College
 Okanagan College
 Selkirk College
 Vancouver City College
 Vancouver School of Art
 Vancouver Vocational Institute

Burnaby 2, B.C.
 West Vancouver, B.C.
 Kamloops, B.C.
 New Westminster, B.C.
 Nanaimo, B.C.
 Prince George, B.C.
 Kelowna, B.C.
 Castlegar, B.C.
 Vancouver 9, B.C.
 Vancouver 3, B.C.
 Vancouver 3, B.C.

B.C.I.T.
 Capilano
 Cariboo
 Douglas
 Malaspina
 New Caledonia
 Okanagan
 Selkirk
 V.C.C.
 V.S.A.
 V.V.I.

Any comments which you would like to submit concerning any aspect of this publication would be much appreciated and may be sent to the:

Career Outlook Section
 Professional and Technical Occupations Division
 Department of Manpower and Immigration
 Ottawa, K1A-0J9
 Ontario

Biological Sciences

University



Biology is the science of all living things, and, as a university discipline, has two major areas of study—botany (plant biology) and zoology (animal biology). However, some schools have begun to establish unified Biology departments, a combination of both branches of this discipline, so that living things may be studied at the molecular, organismic, and community levels.

A considerable number of universities across the country offer programs of study in Biology at all degree levels. These programs provide students with a broad background in all the discipline's specializations. Students may obtain their degrees in such fields as Biochemistry—the study of the chemical processes of living matter; Biophysics—the study of biological structures and processes in terms of physics; Physiology—the study of the function of organisms; or Microbiology—an examination of microscopic life.

Employment for graduates in the Biological Sciences often depends on the graduate's specialization and degree level. Those with a Bachelor's degree may find employment in teaching in elementary and secondary schools or as junior technicians or laboratory assistants in governmental, university, or industrial laboratories. Other graduates may become environmental monitors, game wardens, fisheries survey assistants, or naturalists.

Biologists with a Master's or Doctoral degree may embark on careers as teachers in universities or community colleges, or they may become research officers in governmental laboratories.

Biochemistry

16

Biochemistry may be defined as the study of the chemistry and the chemical processes of living matter. Programs of study in this discipline are offered by a number of universities across the country and are designed to prepare graduates to enter governmental, industrial, university, or hospital laboratories. Students may work towards a Bachelor's degree, or they may continue on to graduate work and obtain a Master's or Doctoral degree in the biological or medical sciences.

Students planning to enroll in a course of study in Biochemistry should ensure that they have included courses in chemistry, physics, mathematics, and biology in their secondary school programs. These courses are often necessary to meet university entrance requirements. However, as entrance standards do vary, depending on the institution concerned, students should consult the registrar or calendar of the university in question for specific information on enrolment.

Generally speaking, during the first and second years of study, prospective biochemists will be required to take courses in mathematics, chemistry, biology, and physics, as well as electives in the social sciences and the humanities. Curricula provide instruction in courses covering the entire field of biochemistry. Students are involved in the chemistry and intermediary metabolism of carbohydrates, liquids, proteins, and nucleic acids, as well as the principles and mechanisms of biological oxidation, enzymology, and genetics. Other courses available include mineral metabolism, the biochemistry of plants, neurochemistry, the history of biochemistry, the biochemistry of hormones, comparative biochemistry, the regulation of metabolism, and biochemical techniques. In the medical sciences, the emphasis is on the biochemical processes in health and disease. Study is conducted through both classroom lectures and laboratory work.

Graduates of Biochemistry may find employment in one of several areas. They may be employed in industry where they may be involved in the development and manufacture of biological products. Others are employed by the federal and provincial governments in research or inspection, while still others fill positions in hospitals. Those biochemists with advanced degrees are eligible to teach or conduct research at the university level.

Biophysics

Biophysics involves the study of biological structures and processes in terms of physics. A number of Canadian universities offer programs of study in Biophysics at all degree levels to train students for teaching and research positions in medicine, government, education, and industry.

Curricula provide students with a sound background in chemistry, physics, and mathematics during the first and second year of study. Students then concentrate on the physics of living things, biophysical analysis, the history of scientific ideas, the physics of cell shape and size, membrane structure and function, and the role of cell water. Other courses cover bio-electrical phenomena, biothermodynamics, radio biology, and molecular biophysics, and the effect of environmental factors such as temperature, gravity, sound, and gaseous atmospheres on living things. Study is conducted both through classroom lectures and laboratory work.

Although entrance requirements to departments of Biophysics often vary, depending on the university, students should include physics, chemistry, and mathematics in their secondary school program of study. For specific information regarding this matter, students are advised to consult the registrar or the calendar of the institution concerned.

Biophysicists may embark on careers in government research and inspection, or fill positions in industrial and medical laboratories. Those with advanced degrees may enter university teaching. Those graduates possessing a Bachelor of Science degree in Biophysics may readily find secondary school teaching positions, after suitable training, because they are usually qualified to deal with physics, mathematics, biology, and chemistry.

Botany

Food

17

A number of universities across Canada offer degree programs in Botany, usually through their departments of Biology or Biological Sciences. These programs offer sound knowledge of all Botany specializations. Students considering a career in Botany should ensure that they have included physics, chemistry, mathematics, biology, and languages in their secondary school programs. More detailed information concerning admission requirements can be obtained from the registrar or calendars of those schools concerned.

Botany is the science concerned with all forms of plant life and comprises several major areas of study. Botanists may enter the field of plant morphology, which deals with the structure and forms of plants, or they may become involved in physiology, which involves the examination of plant activity and plant function. Botanists in both these areas study cellular development and chromosomal structure.

Another field of specialization is taxonomy, the classification of plants. The taxonomist's work involves plant dissection and the study of individual parts, chromosome number and arrangement, and biochemical constituents.

Botanists work in the field, travelling unexplored regions, as well as in the laboratory. They may be employed by universities and agricultural schools in teaching capacities or research, or they may conduct studies for federal and municipal governments. They may become involved in ecological studies, observing man and his relationship to plant organisms, or they may enter a relatively new field for botanists—independent consultation.



Food Science involves the application of various scientific principles to the production, processing, preservation, storage, distribution, and consumption of foods. It is also concerned with the maintenance of food quality, the properties of foods, and the changes which take place in these properties with or without processing.

Food Science graduates with a Bachelor's degree may be employed by food companies in the administration of food processing, food plant inspection, quality control, food analysis, process development, or product research and development. Graduates may also be employed by related industries that supply equipment, machinery, and chemicals to the food industry. Graduates with a Master's or Doctoral degree may fill supervisory, laboratory, control, or research positions in food companies and in provincial and federal government departments. Other opportunities exist in teaching and research at the community college or university level.

A number of universities across Canada offer programs of study, at all degree levels, in Food Science, generally through their faculties of Agriculture. Programs of study provide students with a strong background in the biological and physical sciences, and such areas of study as food physics, food chemistry, food process science, food microbiology, food analysis, food engineering, and food safety are offered.

The food industry is one of the largest of all industries in Canada. As is common in most industries, it faces a need for people trained in the basic and applied sciences to meet the challenge of developing new food products, new food processes, and improving currently produced food.

Microbiology/ Bacteriology

18

The study of Microbiology/Bacteriology requires conducting research and laboratory experiments and making observations of the behaviour of micro-organisms such as bacteria, viruses, protozoa, and certain types of fungi. Microbiologists identify micro-organisms by examination of their physiological, morphological, and biochemical characteristics. Their work also includes making observations of the actions of micro-organisms upon living tissues of animals, plants, chemicals, and on dead organic matter. They are also engaged in conducting chemical analyses of substances such as acids, alcohols, enzymes, and other products of microbial metabolism. Several fields of specialization exist for microbiologists. They may concentrate in areas of bacteriology, virology, mycology, physiology, biochemistry, immunology, or taxonomy depending on individual interests.

Graduates in Microbiology are engaged by industries producing useful anti-microbial chemicals or by those which use controlled fermentation processes to produce antibiotics, wines, beer, and other fermented products. They may also be employed by hospitals, the food industry, universities, and government.

Programs of study in Microbiology/Bacteriology are offered by a number of universities across Canada and lead to a Bachelor's, Master's, or Doctoral degree. Curricula include courses in the history of microbiology, the classification of microbial forms, preparation of media, methods of culture, and microbiological techniques. Other courses cover the study of bacterial growth and metabolism, viruses, fungi, and applied microbiology. At the graduate level students receive instruction in advanced biochemistry, molecular biology, microbiology, microbial physiology, mycology, and microbial ecology.

Students planning to enroll in a Microbiology/Bacteriology program should ensure that they have included biology, chemistry, and mathematics in their secondary school programs. Students are advised to consult the chosen university for more specific information on entrance requirements.

Physiology

Physiology is that branch of the Biological Sciences which involves the study of the functions of organisms and their parts. A considerable number of universities across Canada offer programs of study in Physiology at all degree levels. These provide students with a sound background in physiological principles and methods of investigation through both classroom lectures and periods in the laboratory.

Students planning to enroll in a course of study in Physiology should ensure that they have included biology, chemistry, physics, and mathematics in their secondary school programs, as these courses often form part of admission requirements in university science faculties. Students are advised to contact the registrar of the university concerned for detailed information regarding this matter.

Generally speaking, curricula provide students with a background in chemistry, physics, and mathematics during the first and second years of study. They then build on this knowledge through instruction in biochemistry, biology, anatomy, and in human physiology, which involves the various systems of the human body and how they function; cardiovascular physiology, which involves the function and control of the heart and blood vessels; respiratory physiology, and the physiology of body fluids. Other courses cover principles of physiological investigation and quantitative physiology, and some universities also include courses in animal physiology in their curricula.

Graduates of Physiology may conduct research in governmental, industrial, or medical laboratories, or they may act as analysts in hospitals providing doctors with assistance in treatment of patients. Following a period of graduate study, others enter the teaching profession at the university level.

Zoology

19

Zoology involves an examination of the origin, classification, function, behaviour, life processes, diseases, and parasites of animals.

The work of zoologists requires constant experimentation with all forms of animal life. They perform such duties as making observations, keeping records, and controlling conditions of breeding, growth, and nutrition. This work is performed in both the laboratory and in the field.

Zoologists are employed by public health agencies, or they may find positions in pharmaceutical research laboratories developing serums. Zoologists may also work in zoos, national parks, game reserves, or museums. Those with advanced degrees may teach at the community college or university level. Zoologists are also needed in biological oceanography and pollution studies.

Students planning to embark upon the study of Zoology should have a sound background in biology, mathematics, physics, chemistry, and languages at the secondary school level.

A number of Canadian universities offer courses of study at all degree levels, usually through their departments of Biology or Biological Sciences. These programs provide students with a basic background in zoology and allow for concentration in specialized areas of study such as ornithology, the study of birds; taxonomy, the systematic classification of organisms; entomology, which deals with the study of insects and allied creatures, and parasitology, the study of parasitic creatures and their host-dependency relationships.



Legend:

- Bachelor
- △ Bachelor/Master
- Bachelor/Master/Doctorate
- Master/Doctorate
- ▼ Master
- ★ Doctorate
- Diploma

UNIVERSITY

COURSE

ANATOMY BACTERIOLOGY/MICROBIOLOGY BIOCHEMISTRY BIOLOGY BIOPHYSICS BOTANY FOOD SCIENCE PHYSIOLOGY ZOOLOGY

ATLANTIC PROVINCES

| | | | | | | | | | |
|--------------------------|----|---|---|---|---|---|---|---|--|
| MEMORIAL | 1 | ● | ● | ■ | | | ■ | | |
| P.E.I. | 2 | △ | △ | △ | ■ | | | | |
| ACADIA | 3 | ● | ● | ● | □ | △ | ■ | △ | |
| DALHOUSIE | 4 | ▼ | ● | ● | ■ | △ | □ | | |
| MT. ST. VINCENT | 5 | | ■ | | | | | | |
| N.S.C. OF ART AND DESIGN | 6 | | | | | | | | |
| N.S. TECH. COLL. | 7 | | | | | | | | |
| ST. FRANCIS XAVIER | 8 | | | △ | | | | | |
| ST. MARY'S | 9 | | | ■ | | | | | |
| MONCTON | 10 | | | | | | | | |
| MOUNT ALLISON | 11 | | | △ | | | | | |
| U.N.B. | 12 | ● | ● | | | | | | |

QUEBEC

| | | | | | | | | | |
|-----------------------|----|---|---|---|---|---|---|--|--|
| BISHOP'S | 13 | | ■ | △ | | | | | |
| LAVAL | 14 | ● | ● | ● | ● | ● | □ | | |
| LOYOLA | 15 | | ■ | ■ | | | | | |
| MCGILL | 16 | ● | ● | ● | ● | ● | ● | | |
| MacDONALD COLLEGE | 17 | ● | ● | ● | ● | ● | ● | | |
| MONTREAL | 18 | ● | □ | ● | ● | □ | | | |
| QUEBEC CHICOUTIMI | 19 | | | ■ | | | | | |
| QUEBEC HULL | 20 | | | | | | | | |
| QUEBEC MONTREAL | 21 | | | ■ | | | | | |
| QUEBEC QUEBEC | 22 | | | | | | | | |
| QUEBEC RIMOUSKI | 23 | | | ■ | | | | | |
| QUEBEC ROUYN | 24 | | | ■ | | | | | |
| QUEBEC TROIS-RIVIERES | 25 | | | ■ | | | | | |
| SHERBROOKE | 26 | □ | □ | □ | ● | □ | | | |
| SIR GEORGE WILLIAMS | 27 | | ■ | △ | | ■ | | | |

ONTARIO

| | | | | | | | | | |
|------------------------|----|---|---|---|---|---|----------------|---|--|
| BROCK | 28 | ■ | △ | △ | ■ | △ | | | |
| CARLETON | 29 | | ■ | ● | | | | | |
| GUELPH | 30 | □ | ● | □ | ● | ● | △ ² | ● | |
| LAKEHEAD | 31 | | | △ | | | | | |
| LAURENTIAN | 32 | | | △ | | △ | | △ | |
| McMASTER | 33 | | ● | ● | ● | ▼ | | | |
| ONTARIO COLLEGE OF ART | 34 | | | | | | | | |
| OTTAWA | 35 | □ | □ | ● | ● | | □ | | |
| QUEEN'S | 36 | ● | ● | ● | ● | | ● | | |
| ROYAL MILITARY COLLEGE | 37 | | | | | | | | |
| RYERSON | 38 | | | | | | | | |
| TORONTO | 39 | □ | ● | ○ | ● | □ | ● | ● | |
| TRENT | 40 | | | ■ | | ● | △ | | |
| WATERLOO | 41 | | | ● | | | | | |
| WATERLOO LUTHERAN | 42 | | | | | | | | |
| WESTERN ONTARIO | 43 | ● | ● | ● | ● | ● | | | |
| WINDSOR | 44 | | ■ | ■ | ● | | | | |
| YORK | 45 | | | ● | | | | | |

WESTERN PROVINCES

| | | | | | | | | | |
|------------------------|----|---|----------------|---|---|---|----------------|---|---|
| BRANDON | 46 | | | ■ | | | | | |
| MANITOBA | 47 | □ | ● ¹ | □ | △ | ● | △ ² | □ | ● |
| WINNIPEG | 48 | | | ■ | | | | | |
| SASKATCHEWAN REGINA | 49 | ● | ● | ● | ● | ● | | | |
| SASKATCHEWAN SASKATOON | 50 | ● | ● | ● | ● | ● | ▼ | ● | ● |
| ALBERTA | 51 | | | | | | | | |
| CALGARY | 52 | ● | ● | ● | ● | ● | | | |
| LETHBRIDGE | 53 | | | ■ | | | | | |
| NOTRE DAME | 54 | | | ■ | | ■ | | | |
| SIMON FRASER | 55 | □ | ● | ● | ● | □ | | | |
| U.B.C. | 56 | ● | ● | ● | ● | ● | ● | ● | ● |
| VICTORIA | 57 | ■ | ● | ● | ● | ● | ● | ● | ● |

1 - Also Medical Microbiology

2 - CIFST Accredited

Liberal Arts

University



Canadian universities offer many courses of study that are not necessarily career-oriented, but rather attempt to cultivate in students the critical and analytical

attitudes needed to better understand and appreciate man and the world he inhabits. These studies belong to the realm of the Liberal Arts. Students who participate in an undergraduate program in this area may use this background as a basis for continued studies or they may then concentrate on an in depth disciplinary or multi-disciplinary study.

Virtually every university in Canada offers courses of study in the Liberal Arts. The large number of diverse disciplines included in this area offer students a variety of paths to take in their investigations into man and his development. In African, Asian, Canadian, and Slavic Studies, students may receive instruction in the literature, history, and language of the country or countries concerned, as well as introductions to their politics, history, and sociology. Classics, History, Language, Linguistics, Literature, Philosophy, Religious Studies, and Theology all help students to better understand the values, aspirations, and limitations of man. It is the purpose of the study of all those disciplines to cultivate an appreciation for past and present ideas and a capacity to generate new ones.

While these areas of study do not prepare students to enter specific fields of employment, they do enable students to embark upon a variety of careers. Graduates may enter such occupational areas as retailing, manufacturing, industry, journalism, or teaching. Those with advanced degrees may be employed as interpreters, translators, researchers, university and community college professors or they may continue studies in such professional areas as law or medicine. Employment may also be found in the federal and provincial governments or such fields as international relations, foreign affairs, or immigration. Graduates will find that advanced degrees and practical experience are an asset in gaining suitable employment.

African Studies

22

Within the last two decades Africa has emerged as a continent composed of new and developing areas. These new states are seeking economic and technical aid, and in some cases are bringing their internal problems to such world organizations as the United Nations for solution. Subsequently, nations throughout the world have taken a great interest in Africa and are attempting to create and maintain cultural and economic bonds.

This growing interest is beginning to be reflected in Canada's university system. The curriculum is essentially interdisciplinary, providing students with a sound background in all aspects of Africa. Because there is no single dominant language, the approach to African Studies does not emphasize literature or linguistics as much as programs in Slavic or Asian Studies. However, courses in African linguistics are available.

Students receive instruction in law, industrial relations, and aspects of anthropology. The curriculum also provides courses in the examination of social organizations, the theory of economic growth, and the geography of development and underdevelopment.

Other universities in Canada offer courses concerned with Africa in various departments. For example, students in History could obtain a Master's degree with specialization in African Studies.

Graduates of African Studies may enter the field of teaching at the university or community college level. Others enter the business world or work for an industrial enterprise, while still others become journalists, creative writers, or public relations people. The training and knowledge graduates in African Studies receive make them a valuable asset within the federal government both at home and abroad, where they may function as translators or advisors.

Asian Studies

Recent developments in world affairs, including Canada's recognition of the People's Republic of China and the strengthening of cultural bonds between East and West, have contributed greatly to the need to understand the most populated continent in the world. In many ways, Asian affairs, such as the conflict in southeast Asia and frictions in the Middle East, dominate the political scene and are a main stumbling block to the development of world peace.

The field of Asian Studies is so broad and diversified that it is difficult to include it in one specific university program of study. Students may take courses in this field through one of the following faculties: Political Science, Geography, Languages, Sociology, Economics, or the Fine or Performing Arts, or they may enroll in one of the ten universities in Canada that does offer a degree program in this field at the undergraduate level.

As an educational discipline, Asian Studies involves the study of such countries as China, Japan, Indonesia, India, and Pakistan. It also covers courses in such languages as Chinese, Japanese, Arabic, Hebrew, Hindi, and Sanskrit. Students will become familiar with the works of various authors in each of these languages to improve their fluency and to help in understanding the culture and history of the country or region concerned.

Graduates in Asian Studies may fill positions with the federal government or various international organizations such as the United Nations or the International Labour Organization as translators, researchers, consultants, or administrators, both at home and abroad. Others may enter the fields of journalism, creative writing, or public relations, while still others fill managerial and research positions in business and industry. Graduates with advanced degrees may teach or conduct research at the university and community college level.

Canadian Studies

Classics

23

A considerable number of Canadian universities offer programs in Canadian Studies at all degree levels. These may be offered independently or through other departments such as the Departments of History or Sociology. Canadian Studies provide students with a better understanding of the cultural, political, and economic role Canada plays in international affairs. They also gain an understanding of the problems that confront society in general and gain an insight into possible solutions.

In the field of Canadian Studies, a multi-disciplinary approach is essential. Curricula provide a wide range of courses including history, French, English, literature, economics, sociology, political science, fine arts, and geography.

Graduates may embark on careers in the teaching field at the elementary, secondary, and post-secondary levels, while others may go into publishing, journalism, creative writing, or the business world. Still others are engaged by the federal, provincial, or municipal governments.

Although Classics graduates are not trained for a specific vocation, a sound background in the subject will enable graduates to embark on various academic business or governmental careers.

Training in classical language and literature is invaluable for entry into the professions of law, medicine, or theology and for the graduate to study comparative literature, linguistics, medieval history, art history, or religious studies. Some graduates after intensive language studies may fill positions as translators, archeologists, librarians, journalists, or actors. Graduates may also fill positions in the theatre or in museums. Still others enter the teaching profession at the secondary school or university level.

Most Canadian universities offer degree programs in Classics at all degree levels. The study of Classics varies in content from one university to another. At some universities, programs are limited to the study of Greek and Latin languages. Other schools include courses in the history of the ancient world. In its widest form the subject is all-embracing. Degree programs in the Classics may involve the study of Greek and Roman civilizations through their history, literature, art, language, and philosophy. Students of Classics are equipped with a thorough understanding of the roots of Western civilization.

Curricula often include related courses of study such as archeology. Some universities provide courses in linguistics and the study of the nature of language.

History

24

The study of History aids students in broadening their appreciation of life and seeing man in perspective. Although graduates may not necessarily practice as professional historians, they will find their education a valuable basis for a variety of careers.

History graduates may enter the fields of law, business, teaching, librarianship, archives work, or journalism, but additional studies in these fields are normally required. Such graduates may also enter public administration or public relations where there is a growing need for qualified personnel with critical training and historical perspective.

To practise as a professional historian, a student must combine specialization with an advanced degree. A Master's degree is the usual requirement for a professional historian and often a Doctorate or some completed work towards this degree is required for specialized areas. Graduates with specialization in History may fill positions in academic research and teaching, or with various agencies of the federal and provincial governments.

A large number of universities across the country offer programs of study in History at all degree levels. Students receive a sound background in world history, current events, and methods of critical analysis. In general, universities are restructuring their curricula to provide the prospective historian with specialization in fields such as African, Slavic, Latin-American, Far Eastern, and East European Studies.

As the social sciences become more sophisticated, their relationship to history becomes more apparent, and courses of study in History tend to integrate these related fields or to be offered in combination with them. Business History, with its concentration on business in society, employs a thematic approach rather than a geographic or historical one.

Languages

A knowledge of languages is a key to appreciating various cultures and assists in eliminating any misunderstandings between cultures.

As a result, Language graduates, having obtained this knowledge, are particularly desired by the federal government as members of their immigration, trade, and diplomatic missions abroad. Such graduates also find careers as interpreters or translators in various international and private organizations which conduct their operations in areas other than Canada. Positions as interpreters and translators are as well offered by the federal government to those skilled in both French and English. There is also a need for graduates with a good working knowledge of languages for international trade and commerce.

Specialists with training in Languages are employed in television, where they may advance as far as conducting their own language programs; in journalism, where they may become editors, writers, or commentators often in the ethnic press, and in libraries, where they serve as translators. Those with a specialized degree in another language may become secondary school teachers. Others who continue on to graduate study may be engaged at the community college or university level in language teaching. Speech therapy offers career possibilities to those willing to undertake the advanced university training required.

Most universities across Canada offer programs at all degree levels in at least one or two languages while several schools offer courses in as many as 12 languages. Because of the number of languages offered under such a wide range of titles, students are well advised to examine calendars of those schools of interest. Broadly speaking, curricula provide students with a verbal and written knowledge of the language being studied which is augmented by courses in literature, history, and current events. Students receive instruction through lectures, classroom practice, and exercises in the language laboratory.

Linguistics

Literature

25

Linguistics is concerned with the study of language and of all aspects of human communication.

Generally, university curricula encourage students to combine the study of a language with another subject such as English, French, or another language, education, mathematics, anthropology, or psychology. Such combinations provide graduates with the background to become teachers in secondary schools and universities or instructors overseas. A number of linguists are now working in this field. Other Linguistics graduates become translators or enter the communications engineering industry. There is presently a very immediate need for linguists trained in second language teaching, especially French and English combinations.

Linguistics contributes much to the modern world providing a valuable instrument to the social scientist in the analysis of social groups. Physicists and engineers concerned with communication and information theory can increase their understanding of languages by studying linguistics, and psychologists and speech therapists find psycho-linguistics to be of great value. A noteworthy development in this field is that it is beginning to bridge the gap between the sciences and the humanities as in the study of experimental phonetics or acoustics with philosophy.

Programs of study in Literature at all degree levels are offered by many universities across Canada. These programs are offered through the departments of English or French or students may enter special faculties of Comparative Literature which require that the student have a working knowledge of at least two languages. Students may also major in literary studies in the areas of Slavic studies or Asian studies.

Employment opportunities for graduates exist in a number of areas of the labour market. Graduates in Literature may become involved in television, do library work, enter the field of journalism as creative writers, or become teachers. Those with more specialized degrees in another language may become secondary school teachers. Literature graduates may even seek careers as speech therapists following a period of study in that field. Others may find employment as teachers at the university or community college level following graduate studies.

There have been several major developments in the field of literature in recent years. One has been the integration of literature with another field of study such as journalism or law. The need to grasp relationships has become as important as the need to communicate. Another trend in the emerging field of comparative literature involves the study of literature in its international context relating and comparing literary development usually studied separately. The emphasis on bilingualism in Canada has been a major factor in the promotion of the joint study of English and French Canadian literature.



Philosophy

26

Through the study of Philosophy, the student seeks an understanding of all aspects of human experience. Although an undergraduate program in Philosophy does not train students for a specific career, it does offer an education broad enough to enable students to enter a variety of professions such as business, theology, social work, or law. The study of Philosophy strengthens the student's qualifications to teach in secondary schools, to become involved in computer or systems analysis, or to enter the fields of publishing, creative writing, or journalism.

A Master's degree in Philosophy offers a valuable stepping stone for related occupations or for further study in a professional field. University teaching and research are available to those graduates with a Doctoral degree. However, at present the number seeking university appointments in Philosophy greatly exceeds the number of openings. This condition can be expected to continue for a number of years. Such graduates may also fill research positions with business organizations or with government agencies concerned with the development of education. Those with graduate degrees may also be needed as instructors by those community colleges offering courses in Philosophy.

Most universities across Canada offer undergraduate degree programs in Philosophy and many confer Master's or Doctoral degrees. In recent years, curricula have become increasingly interdisciplinary. Philosophical research is often combined with another field such as psychology, history, or physics. Philosophical studies include courses in logic, the history of philosophy ethics, linguistic analysis, metaphysics, the philosophy of religion, and the philosophy of science. There is an increasing emphasis on social and political philosophy, aesthetics, the philosophy of history, and the philosophy of education. Students of Philosophy, as a result, receive a deeper understanding of man and of man's attempts to understand himself and his relationship to the world about him.

Religious Studies

Religious studies involves an examination of the origins, history, literature, and thought of all major religions. It offers to the student an understanding of these religions and assesses their significance both in their original cultural context and in man's present situation. An education in this discipline provides students with a better understanding of man's development and the political, social, moral, economic, and artistic implications and relationships his religions entail.

The graduate of a program in Religious Studies enters the labour market with a broad liberal education. Graduates with a Bachelor's degree may find employment in creative writing, government, journalism, business, or publishing. Following a further year of study in Education, such graduates may teach at the secondary school level. Those with a degree at the Master's or Doctoral level may teach in universities or community colleges, or they may enter research. If graduates have integrated their academic studies with practical training, welfare work is also a possible area of employment. Religious Studies may also be used as a basis for further training in social work, librarianship, or to enter a church profession or Divinity program.

More than 20 universities across Canada offer a Bachelor of Arts degree program with concentration for honours in Religious Studies, while 10 provide courses of study at the graduate degree level. Some universities have now instituted a first degree in Religious Studies. Through courses in philosophy, history, music, anthropology, psychology, sociology of religion, and textual, literary and linguistic studies, students will acquire an objective and critical approach to religion that will enable them to grapple with modern problems.

Secondary school students seeking admission to a Religious Studies program should contact the registrar or carefully examine the calendar of the university concerned as admission requirements vary depending on the institution.

Slavic Studies

Theology

27

Slavic Studies investigates practically every country in Eastern Europe in addition to the Soviet Union. Although there are cultural, political, linguistic, and historical differences between individual countries, many of these countries today have similar political systems and are often represented in international affairs as one area of the world.

A considerable number of universities across Canada offer programs of study in Slavic Studies at the Bachelor's and Master's degree level. Several institutions offer programs of study at the Ph.D level, in Russian and East European literature, linguistics, history, and other disciplines. In most cases, a student need not speak a Slavic language to qualify for admission. However, once enrolled in a Slavic Studies program, students will be required to learn one or two Slavic tongues. Courses are available in the following languages: Russian, Polish, Ukrainian, Serbo-Croatian, and Czechoslovakian.

Slavic Studies is a broad field, but for the most part curricula emphasize the linguistics, literature, and history of the East European area. Students may be required to read the great writers of the Slavic languages. Courses in history cover the development of the various civilizations, and students also receive a background in the culture and religion of the country concerned.

In addition to studying within Canada, various student exchange programs are available for those wishing to improve their knowledge of a Slavic language. For instance, the University of Toronto has an exchange program with Russia.

Graduates of Slavic Studies may be employed with the federal government, both at home and abroad, where they function as translators, researchers, or advisors. They may enter the teaching profession at the university and community college levels and, in some provinces, in the secondary schools. Others enter the world of business and industry, and some go into public relations, creative writing, or journalism.

There are many interesting career opportunities or combinations of careers accessible to the graduate of Theology. The study of Theology or Divinity prepares graduates for the ordained ministry or for a related career as a layman trained in theology. Most Theology graduates enter a parish setting which may be inner-city, suburban, town, or rural. Others are engaged by government departments or churches to work or teach overseas. Some Theology graduates are finding their roles in hospitals, prisons, army or university chaplaincies, in pastoral counselling, marriage guidance, or family relationships guidance.

Theology involves the study of religious questions based on revelations, which include the analysis of sacred texts, traditions, dogmas, and the application of theological perspective to human events.

Forty-six Canadian institutions sponsored by or affiliated with religious denominations grant degrees in Theology at all degree levels. The basic entrance qualification to the school of Theology is a Bachelor's degree in Arts and/or Science. There are several universities where students of various Christian groups are studying together.

As undergraduates, students may take introductory courses in religious studies. They also select electives in related fields such as philosophy, practical and theoretical psychology, history, literature, or sociology. In most cases, practical training is carried on simultaneously with academic theology, and the trend increases towards supervised clinical training in a parish, in hospitals, and in community service agencies. In addition, several experiments within the academic system are being conducted to make courses less rigid, more flexible in methods, and more related to contemporary life.

Legend:

- Bachelor
- △ Bachelor/Master
- Bachelor/Master/Doctorate
- Master/Doctorate
- ▼ Master
- * Doctorate
- Diploma

| UNIVERSITY | COURSE | AFRICAN STUDIES | ASIAN STUDIES | CANADIAN STUDIES | CLASSICS | ENGLISH | FRENCH | GENERAL ARTS | GERMAN | HISTORY | LANGUAGES | LETTERS | LINGUISTICS | LITERATURE | MEDIEVAL STUDIES | PHILOSOPHY | RELIGIOUS STUDIES | SLAVIC STUDIES | SOUTH AMERICAN STUDIES | THEOLOGY | WAR STUDIES |
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| ACADIA | 3 | ■ | △ | △ | △ | △ | ■ | ■ | ■ | △ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | | 3 | |
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| MT. ST. VINCENT | 5 | | | | | | | | | | | | | | | | | | | | 5 |
| N.S.C. OF ART AND DESIGN | 6 | | | | | | | | | | | | | | | | | | | | 6 |
| N.S. TECH. COLL. | 7 | | | | | | | | | | | | | | | | | | | | 7 |
| ST. FRANCIS XAVIER | 8 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | | | | 8 |
| ST. MARY'S | 9 | | | | | | | | | | | | | | | | | | | | 9 |
| MONCTON | 10 | | | | | | | | | | | | | | | | | | | | 10 |
| MOUNT ALLISON | 11 | | | | | | | | | | | | | | | | | | | | 11 |
| U.N.B. | 12 | | | ■ | ● | △ | △ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | △ | | | | | 12 |
| QUEBEC | | | | | | | | | | | | | | | | | | | | | |
| BISHOP'S | 13 | | | ■ | ■ | △ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | △ | | | | 13 |
| LAVAL | 14 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | 14 |
| LOYOLA | 15 | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 15 |
| MCGILL | 16 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 16 |
| MacDONALD COLLEGE | 17 | | | | | | | | | | | | | | | | | | | | 17 |
| MONTREAL | 18 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | 18 |
| QUEBEC CHICOUTIMI | 19 | | | | | | | | | | | | | | | | | | | | 19 |
| QUEBEC HULL | 20 | | | | | | | | | | | | | | | | | | | | 20 |
| QUEBEC MONTREAL | 21 | | | | | | | | | | | | | | | | | | | | 21 |
| QUEBEC QUEBEC | 22 | | | | | | | | | | | | | | | | | | | | 22 |
| QUEBEC RIMOUSKI | 23 | | | | | | | | | | | | | | | | | | | | 23 |
| QUEBEC ROUYN | 24 | | | | | | | | | | | | | | | | | | | | 24 |
| QUEBEC TROIS-RIVIERES | 25 | | | | | | | | | | | | | | | | | | | | 25 |
| SHERBROOKE | 26 | | ▼ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 26 |
| SIR GEORGE WILLIAMS | 27 | | ■ | ■ | ■ | △ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 27 |
| ONTARIO | | | | | | | | | | | | | | | | | | | | | |
| BROCK | 28 | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | △ | △ | ■ | | 28 |
| CARLETON | 29 | | ▼ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | | △ | △ | △ | △ | ■ | 29 |
| GUELPH | 30 | ■ | | ■ | ■ | △ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 30 |
| LAKEHEAD | 31 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 31 |
| LAURENTIAN | 32 | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 32 |
| McMASTER | 33 | ● | ● | ● | ● | △ | | △ | ● | ● | ● | ■ | ■ | ■ | | ■ | ● | ● | ● | ● | ▼ |
| ONTARIO COLLEGE OF ART | 34 | | | | | | | | | | | | | | | | ■ | ● | ● | ● | |
| OTTAWA | 35 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | △ | | ● | ● | ● | ● |
| QUEEN'S | 36 | | △ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | 36 |
| ROYAL MILITARY COLLEGE | 37 | | | | | | | | | | | | | | | | | | | | 37 |
| RYERSON | 38 | | | | | | | | | | | | | | | | | | | | 38 |
| TORONTO | 39 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | 39 |
| TRENT | 40 | | | | | | | | | | | | | | | | | | | | 40 |
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| WESTERN ONTARIO | 43 | | | | | | | | | | | | | | | | | | | | 43 |
| WINDSOR | 44 | | | | | | | | | | | | | | | | | | | | 44 |
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| WESTERN PROVINCES | | | | | | | | | | | | | | | | | | | | | |
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| MANITOBA | 47 | | | | | | | | | | | | | | | | | | | | 47 |
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| SASKATCHEWAN REGINA | 49 | | | | | | | | | | | | | | | | | | | | 49 |
| SASKATCHEWAN SASKATOON | 50 | △ | △ | ■ | ■ | △ | △ | △ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | △ | △ | △ | △ | 50 |
| ALBERTA | 51 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | 51 |
| CALGARY | 52 | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 52 |
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| NOTRE DAME | 54 | | | | | | | | | | | | | | | | | | | | 54 |
| SIMON FRASER | 55 | ■ | | ■ | ■ | △ | ● | ● | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | △ | ● | ● | ● | 55 |
| U.B.C. | 56 | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | 56 |
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Mathematics and Physical Sciences

University



In the field of exact sciences such as mathematics and physics, few direct applicable positions or career areas are available. Most opportunities which are available are in the academic world. Teaching and theoretical research comprise most of the direct positions. This does not make the field bleak. Graduates in Mathematics and Science have a wide variety of careers if they wish to apply their specialized knowledge to other areas. The computer today is being used in all fields. The book you are reading was produced with the aid of the computer. Psychologists use the computer to gain insight into human problems and the transportation industry uses the computer to schedule flights, sailings, and train departure times. Experts in each of these fields need the Mathematics and Physical Science graduate to assist them in finding specific information.

People trained in Mathematics and Physical Science are assisting the medical professional in more rapidly making all types of calculations which result in further advances in finding cures for diseases once thought incurable.

The mathematical concepts in profit and loss, personnel administration, and government have put great demands on Mathematics and Physical Science graduates to enter these various departments of industry and government. They provide assistance in critical analysis of statistics on which to base further legislation, increased production, or plan further employee benefit programs to better the general economic, social, and legislative form of our nation.

Students inclined towards the precision of mathematics and science should not despair when examining such a course but rather take heart and allow their inquisitive minds to investigate the broad rather than the narrow and limited possibilities.

Actuarial

30

Actuaries are professionally trained executives concerned with chance events. They concern themselves particularly with those chance events which may have a destructive impact on property values or the useful working lifetime of people. Actuaries use the scientific method, built on a foundation of mathematics and statistics, in an orderly approach to provide compensation for financial loss arising out of the disability or death of a person or the destruction of property. Through applied statistical and probability theories, actuaries attempt to determine the number of deaths, the severity of injury by accident, or the amount of medical bills incurred through sickness, and, with the results, fix the prices that people will pay for insurance. In many ways, they are the architects and engineers of the insurance industry.

Fellowship in the Canadian Institute of Actuaries is recognized as the standard of actuarial qualification in Canada. To become a Fellow of the Institute (F.C.I.A.), a person must pass a set of professional examinations.

Programs in Actuarial Science, primarily at the undergraduate level, are offered at several universities in Canada. These programs are of great assistance in preparing for some of the professional actuarial examinations and an actuarial career. The most extensive programs are offered at the universities of Laval, Manitoba, Toronto, Waterloo, and Western Ontario. These programs may be part of or combined with a major in mathematics, statistics, administration, or economics. Students are advised to consult the registrar or the calendar of the institution concerned for more detailed information.

Students interested in entering a university program in Actuarial Science must have a high level of ability and interest in mathematics. Students planning an actuarial career should have a distinct interest in a professional career in business and make every attempt to develop their management skills.

Actuaries are usually employed in insurance, pension, and related fields. Their combination of mathematical and administrative skills usually leads them to high positions on the executive ladder and occasionally right to the top.

The primary employers of actuaries in Canada are the life insurance companies. A growing number are employed in consulting firms as consulting actuaries. Many work independently as consultants for corporate clients, advising them on their employee benefit programs. General insurance companies, federal and provincial governments, universities, some larger industrial concerns, and labor organizations are also employing an increasing number of actuaries. Employment opportunities have always been very good and the prospects for the future are very promising.

Astronomy

Astronomy is the science which deals with the physical nature, the origin, and the evolution of the universe and its various components such as galaxies, nebulae, stars, planets, and the material medium which pervades all of space.

Modern astronomy is specially concerned with expanding our knowledge through new discoveries such as the quasars, pulsars, and X-ray sources which have excited interest in recent years. It is also directed towards a deeper understanding of the physical processes which govern the structure and the evolution of different astronomical objects.

Astronomers work in a variety of areas and perform a wide range of duties. Most are employed either by universities where they combine teaching and research or by the federal government which operates a number of observatories. The research conducted at university and government observatories often requires the operation of large optical or radio telescopes and the subsequent analysis and interpretation of the observational data in an effort to probe the mysteries of the universe. Some astronomers are engaged in the design of new telescopes or radio receivers and antenna systems for particular research projects. Other astronomers with the aid of computers are involved in theoretical investigations which can lead to a better understanding of the nature and constitution of stars and galaxies.

An area of astronomy which is of special current interest is the exploration of the solar system with manned and unmanned space vehicles. In this connection, some astronomers are concerned with the design and the execution of new space experiments involving high-altitude rockets and orbiting satellites.

A few astronomers are also employed in industry especially where astronomy touches the fields of nuclear physics, radio engineering, or aerospace research.

Programs of study in Astronomy are offered at a number of universities in Canada including Toronto and Western Ontario which have separate departments of Astronomy and at British Columbia, Victoria, Queen's, and Montreal where the study of Astronomy is conducted within physics or geophysics departments. Students may obtain a Bachelor's, Master's, or Doctoral degree. In addition to physics and mathematics, curricula include courses in the fundamentals of astronomy,

astrophysics, astronomical techniques, and stellar and galactic astronomy.

Students planning to enroll in an Astronomy program should include chemistry, physics, and mathematics in their secondary school program and also in their university program if they intend to continue their study of Astronomy in graduate school. For further information on admission, students should consult the registrar or the calendar of the university concerned.

Chemistry

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Many Canadian universities provide courses in Chemistry, at all degree levels, designed to furnish students with a knowledge of the underlying principles and skills of the discipline. Students receive a grounding in mathematics, physics, and the theory and practice of modern chemistry. They study the behaviour of the chemical elements and their compounds, the properties of solids, liquids, gases and solutions, theories of chemical bonding, chemical reactions and energetics and the structures of atoms and molecules. Areas of specialization include analytical, inorganic, organic, and physical chemistry, and biochemistry.

Graduates may continue on to a Master's degree or Doctorate. For those considering a career in university teaching, extensive research work and advanced degrees are necessary.

Many Canadian universities offer a four-year program in which the student specializes in chemistry, usually in conjunction with a secondary field of concentration such as biology. Such a program qualifies the student as a chemist, and enables him to work in, for example, industrial research and development laboratories. Related fields include geochemistry, agricultural chemistry and chemical engineering. It is recommended that the students have a background in chemistry and mathematics to satisfy university entrance requirements.

As a discipline, chemistry deals with the composition of substances and their transformation into other substances. Thus, it is concerned with the properties of substances in various states, the relationship of these properties to chemical composition, and the methods of changing substances into new and often useful materials.

The chemist is continually concerned with new ideas, new phenomena, and new approaches to solving problems. His work is highly diversified and complex, and involves basic research in areas such as spectroscopy, the mathematical theories of chemical bondings and reactions, the synthesis of organic and inorganic compounds, nuclear chemistry, radiation chemistry, the study of the solid state catalysis, the rates and energetics of chemical reactions, and electrochemistry.

The graduate of Chemistry may obtain employment in one of several areas. He may become a consultant or enter teaching at the secondary school, community college, or university level. Chemists may be engaged in research and development work in industrial, governmental or university laboratories, in industrial process control, product testing, management or sales, or in combatting pollution.



Computer

33

Computer Science is the science of information. It is concerned with the nature and properties of information, its structure and classification, its storage and retrieval, and the various types of processing to which it can be subjected. It is also concerned with the physical machines that perform these operations, with the elemental units of which these machines are composed, and with the organization of these units into efficient information processing systems.

Computer or Information Science is now well recognized as an independent discipline. The body of computer science knowledge has a decidedly mathematical structure and includes a broad spectrum of activity.

Computer Science programs, at all degree levels, have been established at many Canadian universities. Students receive basic courses in computability theory, logic design, automata theory, and switching and computer system organization. In addition to courses at the theoretical level, curricula provide a solid grounding in mathematics, programming language, numerical analysis, computer systems, and computer software. At some schools, students of the social and life sciences, the physical sciences, engineering, and management science are requested to take courses in Computer Science. At other universities, students are allowed and often encouraged to combine a program in Computer Science with another discipline such as physics, sociology, or psychology. A basic preparation for entrance to the field of Computer Science is a sound background at the secondary school level in physics and mathematics.

Probably the most important aspect of Computer Science is the application of the computer to problems in science, business, and industry. The advent of the computer has led to a systems approach to solving a large proportion of these problems. Inherent in this approach is the need to analyse the information and identify the inputs to and outputs from the system and to specify what functions the system must perform. At the more technical level is the design of a computer-oriented scheme for implementing the system on the computing equipment available. This is called systems analysis. Finally, there is the problem of actually programming the system on the computer and debugging any design faults.

There is a growing need for computer specialists who have the strong mathematical background required to solve a great majority of the information processing problems facing us today. This will necessitate further development of an extensive body of knowledge governing systems, the preparation of more individuals to teach this body of knowledge, and a great number of specialists to apply the knowledge and their own imagination to practical situations. Because the computer will be applied to problems in a great variety of disciplines, there will continue to be a great demand in particular for specialists who have the ability to communicate with practitioners in other disciplines and to approach a situation or problem from the other person's point of view.

Mathematics

34

Mathematics is a basic science essential to the study of many other sciences such as engineering, physics, astronomy, chemistry, and psychology.

Mathematicians must be able to formulate methods to analyse and solve scientific problems. Graduates of mathematics enter the fields of statistics, actuarial work, computer programming, and data processing. They may fill teaching positions in secondary schools, community colleges or universities, or be engaged by government and industry in research work.

Undergraduates degree programs in Mathematics are offered by most universities in Canada with several offering degrees at the Master's and Doctoral levels. The discipline contains two major areas of study—pure or abstract mathematics and applied mathematics. Pure mathematicians are primarily interested in abstract theories involving logical relationships and both quantitative and qualitative reasoning. They are involved with algebra, topology, analysis, geometry, and foundations. Applied mathematics is concerned with the adaptation and use of mathematical theories and abstract models of real systems. Applied mathematics involves such courses as numerical science, mathematical physics, and probability and statistics.

Programs of study at many schools have been expanded to include such courses as statistics, computer science, and operations research. Various schools also provide optional programs of study such as mathematics—economics at the University of Western Ontario or combined programs of study such as the mathematics and philosophy honours B.A. course available at Carleton University.

Physics

Physicists at all degree levels are employed by the mining and oil industries in the search for mineral deposits or petroleum. Governmental research laboratories hire some physicists and industry has a place for such graduates in the development of new products. As well, physicists are employed in hospitals to supervise such services as high voltage x-ray equipment and cobalt bomb therapy.

Those graduates with a Bachelor's degree in Physics or in Physics and Mathematics fill teaching positions at the secondary school level.

For those students desiring a career as a practising physicist a Doctoral degree is almost a necessity. The research training involved in obtaining such a degree is also required for teaching positions in universities and community colleges and for research positions in government and industry.

Programs of study in Physics at all degree levels are offered by a number of universities across the country. Many schools offer intensive courses in Physics plus more flexible courses for students desiring a broader education. Bachelor's degrees are available in either physics, physics and mathematics, or engineering physics. An intensive background in physics provides the student with a stepping stone to graduate work in such fields as solid state high energy or nuclear physics. Graduate studies in bio-physics, upper atmospheric physics and astro physics, meteorology, or computer science are available at certain universities.

Legend:

- Bachelor
- △ Bachelor/Master
- Bachelor/Master/Doctorate
- Master/Doctorate
- ▼ Master
- * Doctorate
- Diploma

| UNIVERSITY | COURSE | ACTUARIAL SCIENCE | ASTRONOMY | CHEMISTRY | COMPUTER SCIENCE | GENERAL SCIENCE | MATHEMATICS | PHYSICS |
|------------|--------|-------------------|-----------|-----------|------------------|-----------------|-------------|---------|
|------------|--------|-------------------|-----------|-----------|------------------|-----------------|-------------|---------|

ATLANTIC PROVINCES

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| MEMORIAL | 1 | | ● | | | ● | ● | |
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| ACADIA | 3 | | △ | ■ | ■ | ■ | ■ | |
| DALHOUSIE | 4 | | ● | ■ | ■ | ■ | ● | |
| MT. ST. VINCENT | 5 | | ■ | | ■ | ■ | | |
| N.S.C. OF ART AND DESIGN | 6 | | | | | | | |
| N.S. TECH. COLL. | 7 | | | | | | | |
| ST. FRANCIS XAVIER | 8 | | △ | | ■ | ■ | | △ |
| ST. MARY'S | 9 | | ■ | | ■ | ■ | ■ | |
| MONCTON | 10 | | △ | | ■ | | | △ |
| MOUNT ALLISON | 11 | | △ | | ■ | | ■ | |
| U.N.B. | 12 | ● | ▼ | ■ | ● | ● | ● | |

QUEBEC

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|-----------------------|----|---|---|---|---|---|---|--|
| BISHOP'S | 13 | | △ | | | ■ | ■ | |
| LAVAL | 14 | ■ | ● | ■ | ■ | ● | ● | |
| LOYOLA | 15 | ■ | ■ | ○ | ■ | ■ | ■ | |
| McGILL | 16 | ● | ● | ■ | ■ | ● | ● | |
| MacDONALD COLLEGE | 17 | ● | ● | ■ | ■ | ■ | ■ | |
| MONTRÉAL | 18 | ● | ● | ● | ● | ● | ● | |
| QUEBEC CHICOUTIMI | 19 | ■ | | | | ■ | ■ | |
| QUEBEC HULL | 20 | | | | | | | |
| QUÉBEC MONTREAL | 21 | | | | | △ | ■ | |
| QUEBEC QUÉBEC | 22 | | | | | | | |
| QUEBEC RIMOUSKI | 23 | | | | | | | |
| QUEBEC ROUYN | 24 | | | | | | | |
| QUEBEC TROIS-RIVIÈRES | 25 | | | | | | | |
| SHERBROOKE | 26 | | | | | | | |
| SIR GEORGE WILLIAMS | 27 | ● | ● | ■ | ■ | △ | ● | |

ONTARIO

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|------------------------|----|---|---|---|---|---|---|---|
| BROCK | 28 | | △ | | | ■ | ■ | △ |
| CARLETON | 29 | ● | ● | | | ● | ● | |
| GUELPH | 30 | ● | ● | ■ | ■ | ● | ● | |
| LAKEHEAD | 31 | △ | ■ | ■ | ■ | △ | △ | |
| LAURENTIAN | 32 | △ | ■ | ■ | ■ | ■ | △ | |
| McMASTER | 33 | ● | △ | ■ | ● | ● | ● | |
| ONTARIO COLLEGE OF ART | 34 | | | | | | | |
| OTTAWA | 35 | ● | ● | ■ | ■ | ● | ● | |
| QUEEN'S | 36 | ● | ● | △ | ■ | ● | ● | |
| ROYAL MILITARY COLLEGE | 37 | ▼ | | | ■ | △ | ▼ | |
| RYERSON | 38 | | | | | | | |
| TORONTO | 39 | ● | ● | ● | ■ | ● | ● | |
| TRENT | 40 | | △ | | | | △ | |
| WATERLOO | 41 | ● | ● | ● | ■ | ● | ● | |
| WATERLOO LUTHERAN | 42 | | | | | | | |
| WESTERN ONTARIO | 43 | ● | ● | ● | ■ | ● | ● | |
| WINDSOR | 44 | | | | | | | |
| YORK | 45 | ● | ● | ■ | ■ | △ | ● | 1 |

WESTERN PROVINCES

| | | | | | | | | |
|------------------------|----|---|---|---|---|---|---|--|
| BRANDON | 46 | | ■ | ■ | ■ | ■ | ■ | |
| MANITOBA | 47 | ● | ● | △ | ■ | ● | ● | |
| WINNIPEG | 48 | ■ | | | | | | |
| SASKATCHEWAN REGINA | 49 | ● | ● | ● | ■ | ● | ● | |
| SASKATCHEWAN SASKATOON | 50 | ● | ● | △ | ■ | ● | ● | |
| ALBERTA | 51 | ● | ● | ● | ■ | ● | ● | |
| CALGARY | 52 | ● | ● | ● | ■ | ● | ● | |
| LETHBRIDGE | 53 | ■ | | | | | | |
| NOTRE DAME | 54 | | | | | | | |
| SIMON FRASER | 55 | ● | ● | | | | | |
| U.B.C. | 56 | ● | ● | ▼ | ■ | ● | ● | |
| VICTORIA | 57 | ● | ● | ● | ■ | ● | ● | |

Applied Chemical Technologies

Community College



Virtually every facet of modern living has been influenced and affected by the applications of Applied Chemical Technology. Areas of study that are available within this field concern the fundamental and underlying principles dealing with chemistry. This field includes Biochemical, Chemical, Food, Laboratory, Plastics, and Textile Technology. Programs in these areas combine lectures with practical experience and training in the use of modern laboratory equipment so that the student will obtain a balanced knowledge of both the practical and theoretical aspects involved.

Students wishing to undertake a course of study in the area of Applied Chemical Technology should begin preparation at the secondary school level. They should concentrate on algebra and a science, particularly chemistry, in order to benefit from the laboratory experience. English courses will also be beneficial. As well as academic requirements, students should also have good eye-hand co-ordination coupled with much patience in order to be effective laboratory workers. They should also have the ability to keep clean and concise records of facts and observations.

Graduate technologists or technicians in this field are trained to assume responsible positions in the area of their particular interest. Students also acquire many manual and procedural skills relative to their specialization.

Biochemical

Chemical

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Biochemists study chemical reactions in living matter, both plant and animal, in order to better understand the life processes involved and the factors that sustain them. Biochemists also analyse food and other materials for content and purity and evaluate the results. Biochemical technologists provide assistance to the professional in the performance of all these functions.

Most of these technologists assist biochemists in research in the fields of medicine, nutrition, and agriculture. In medicine, they seek out the causes and cures for disease. The use of cyclamates as a sweetening agent and its resulting problems and the dangerous presence of pesticides in food products illustrate the need for biochemical technologists in the field of nutrition. In the agricultural sciences, technologists with a biochemical background analyse soils, fertilizers, and plants to promote crop cultivation, storage, and utilization, and to produce effective pest-control agents.

Most of these graduates are employed in research capacities in the departments of Agriculture and National Defence and in the Health Protection Branch of the Department of National Health and Welfare. In addition, many technologists are employed in industry, primarily the chemical and food industries, in the production of drugs, insecticides, and cosmetics. The greatest growth in employment opportunities is expected to be in the field of medicine and results from the expansion of research into widespread health problems. As well, there has been rapid growth in the application of Biochemical Technology in fields such as oceanography and environmental health.

Courses in Biochemical Technology, as offered in community colleges, vary from two to three years in length. The earlier portions of the programs offered in this technology deal with a general consideration of chemistry. Later, the courses become more specifically concerned with the field of biochemistry with specialized studies in biochemistry and microbiology as well as supplementary studies in electronics, electricity, English, zoology, economics, and physiology being offered.

Chemists investigate the properties and composition of matter and the laws that govern the combination of elements in a seemingly endless variety of forms.

There are a great number of community colleges offering both two- and three-year courses of study in Chemical Technology. To ensure an adequate foundation for undertaking such a program, the student should have mastered chemistry, physics, and mathematics at the secondary school level. Programs are usually oriented around one of the basic branches of chemistry: organic, inorganic, analytical, and physical. Other courses that the student may expect to follow are those related aspects of physics, instrumentation, electricity, and mathematics. This broad training is designed to ensure that graduates will be better equipped to adapt to and cope with future developments in the field.

According to the requirements of the Chemical Institute of Canada, a chemical technologist is a person who has successfully completed 2,400 hours of study in a technological institute or community college. Although this is usually spread over a period of three years, some institutions offer corresponding two-year programs. Graduates of most other two-year courses are considered to be senior chemical technicians, whose instruction emphasizes the more practical aspects of the field.

Chemical technologists may work with the processes, techniques, machines, and instruments of various chemical fields in both production and laboratory functions. They assist the chemist in investigation concerning the properties and composition of matter and the nature of substances and may work as teachers' aids in laboratory situations. In research, scientific principles are employed using a variety of specialized instruments to measure, identify, and evaluate changes in matter. Work in the chemical laboratory has resulted in such significant advances that whole new industries, such as plastics, frozen foods, and man-made fibres, have been created.

Employment requiring people with training in Chemical Technology can be found in many fields: foods, glass, rubber, plastics, metals, petroleum, paints, and in government. The role a graduate plays may be as research assistant, chemical analyst, plant control

Food

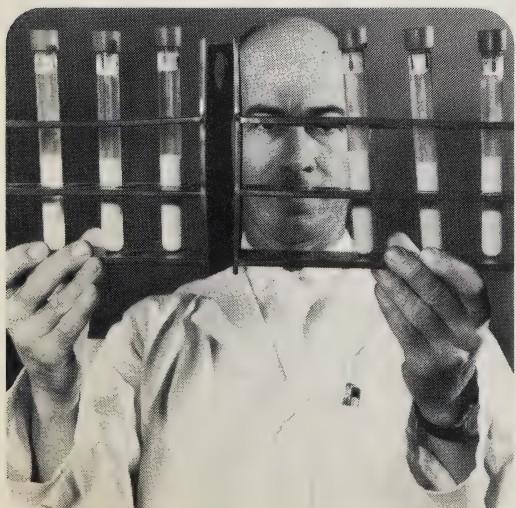
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chemist, laboratory experimentation specialist, or salesman or serviceman for chemical products and equipment. The employment difficulties experienced in recent years seem to be easing, and highly qualified graduates should have little trouble locating employment.

Community college Food Technology programs, which are of two or three years' duration, prepare students for employment in the food processing industry. There are eight institutions offering programs in this science. Before entering this field, students should have concentrated on physics, biology, or chemistry as well as mathematics, at the secondary school level. Once they begin this course of study, students will become involved in the principles of quality control, food analysis, food preservation, processing machinery, instrumentation, food and industrial microbiology, sanitation, and business management. On a more theoretical level, they gain a general knowledge of inorganic and organic chemistry, biochemistry, and bacteriology.

Food Technology deals with the application of modern scientific principles and techniques to the manufacturing, processing, preserving, and distributing of food. The technical task of food manufacturing is an integration of the biological, physical, and behavioural sciences, as well as engineering. All play an important part in new product development, new processing methods, and product evaluation and improvement. It is due to the efforts of food technologists who apply such preservative techniques as canning, freezing, dehydrating, fermenting, pasteurizing, and the use of ionizing radiation, that food may be transported over long distances without deterioration. Such technologists also develop various means of packaging to ensure effective preservation, sanitation, and self-service retail sales. Their primary concern is the maintenance of product quality, especially in terms of controlling chemical and microbiological changes, both during processing and in the period between processing and consumption.

Graduates of Food Technology are employed in distilling and brewing, in the fruit and vegetable, fishing, dairy, and meat industries, and in milling and baking as well as in research, education, and government agencies. They may work in such areas as research and development, plant sanitation, marketing, government inspection, the operation of complex pieces of equipment, or in production control. The demand for food technologists is centred on graduates with leadership ability, a thorough knowledge of all aspects of food processing, and the ability to make decisions.



Laboratory

40

The many advances being made in technology are the product of intensified scientific enquiry and foster further investigation and discovery. Whether this investigation concerns the complex area of nuclear physics or such medical problems as the common cold, the centre of operations is the laboratory. Private industry, educational institutions, and governmental agencies all depend upon the laboratory for imaginative experimentation. In industry, laboratories function for two main purposes—quality control of current products or research aimed at the development and improvement of new products. These laboratories require technicians with the skill, responsibility, and knowledge to effectively assist scientists and engineers.

To meet this demand, several community colleges offer programs in Laboratory Technology, usually two or three years in length. Since the aim of these programs is to provide students with a grounding in chemistry and general scientific laboratory techniques, those preparing for such a program should study practical mathematics and the sciences, especially chemistry, at the secondary school level. The student should also have a strong interest in the experimental aspects and principles of science. Courses in a Laboratory Technology program include biology, microbiology, mathematics, analytical, physical, and inorganic chemistry, laboratory techniques, laboratory instrumentation, and materials testing.

Qualified laboratory technologists are trained for a variety of positions. Under the direction of a scientist, they would be responsible for the actual experimental work carried out on a chemical, biological, or medical research project. This employment may be found in industry, with public health laboratories in municipal and provincial governments, and with pharmaceutical companies. With experience and proven ability, the laboratory technologist may look forward to promotion to a laboratory supervisor. Careers are also available in the sales and service of laboratory apparatus. Upon completion of their course of study, students cannot be truly considered specialists until they have taken a graduate course in a particular area.

Plastics

The plastics industry in Canada has been growing at a rate twice that of the national average for all manufacturing industries. Since its beginning, about a century ago, the industry has grown at such a rate that by 1980, on a volume basis, more products will be made from plastics than from any other material.

To provide technologists who have the theoretical background necessary to understand the properties and performance of various polymeric materials, as well as the basic practical training in the principles of product design and fabrication, several community colleges offer courses in Plastics Technology. Most are of two years' duration with the exception of the three-year program at Ryerson Polytechnical Institute.

The Plastics Technology program includes chemistry, mathematics, plastic properties, polymer chemistry, polymer processing extrusion, and techniques of processing as specific instruction in the technology of plastics materials. Students are usually encouraged to supplement their training with courses in plant layout, business studies, machine shop practice, or communications studies to facilitate report writing and data collection.

Graduates in Plastics Technology will find employment throughout the industry where they will work with chemists, designers, engineers, and shop management people in evolving new materials, creating new designs, developing new techniques, and exercising quality control.

Generally speaking, work assignments require a basic knowledge of the materials and the various production methods of the industry. Specifically, plastics technologists may be employed with laboratories and basic material manufacturers and in technical services, sales, design of products, and production. The very rapid growth of plastics along with the other polymer industries has created a growing need for technologists trained in this field.

Textile

Textile technologists may be defined as persons whose abilities and education enable them to apply scientific principles and mathematical methods to the solution of technical problems and to the improvement of manufacturing methods in the textile industry. Their field deals not only with the production of cloth, but also with that of specialized products used by the industry such as household furnishings, machine belts, cigarette filters, and space capsule linings. In fact, the newest, futuristic fibres are being structured today to possess many desirable properties for this planet as well as for space exploration. Man-made fibres and the various combinations of natural and man-made fibres have created numerous new materials used for various apparel and for household and industrial products.

Courses of study in Textile Technology are offered in several community colleges in Canada. The most extensive programs in this field are two three-year courses —one in English at Mohawk CAAT in Hamilton, Ontario, and the other in French at the CEGEP in St-Hyacinthe, Quebec. The student preparing for entrance into these courses of study should include algebra, geometry, physics, and chemistry in the secondary school program. Textile Technology includes courses in electronics, electrical devices, and computers and computer planning as well as the usual offerings in chemistry, fibre-processing, weaving, design, and textile testing. The scientific aspects of the textile industry are emphasized to provide graduates with an understanding of the newer and more sophisticated processes. Practical experience is gained through summer employment programs sponsored by the Canadian Textile Institute. This practice provides an opportunity for a firm to consider a student for ultimate placement in the organization.

The field of employment for the graduate is quite diversified. Work may be found as a technical sales and service representative, or the graduate may become involved with a production department or laboratory as a buyer, textile chemist, fabric stylist, or designer. A graduate of this technology may also become a colour chemist, production planner, controller, laboratory technologist, mill manager, or research and development group leader. The fact that the industry takes such a great interest in students as potential members of this field enhances the appeal of this profession considerably.

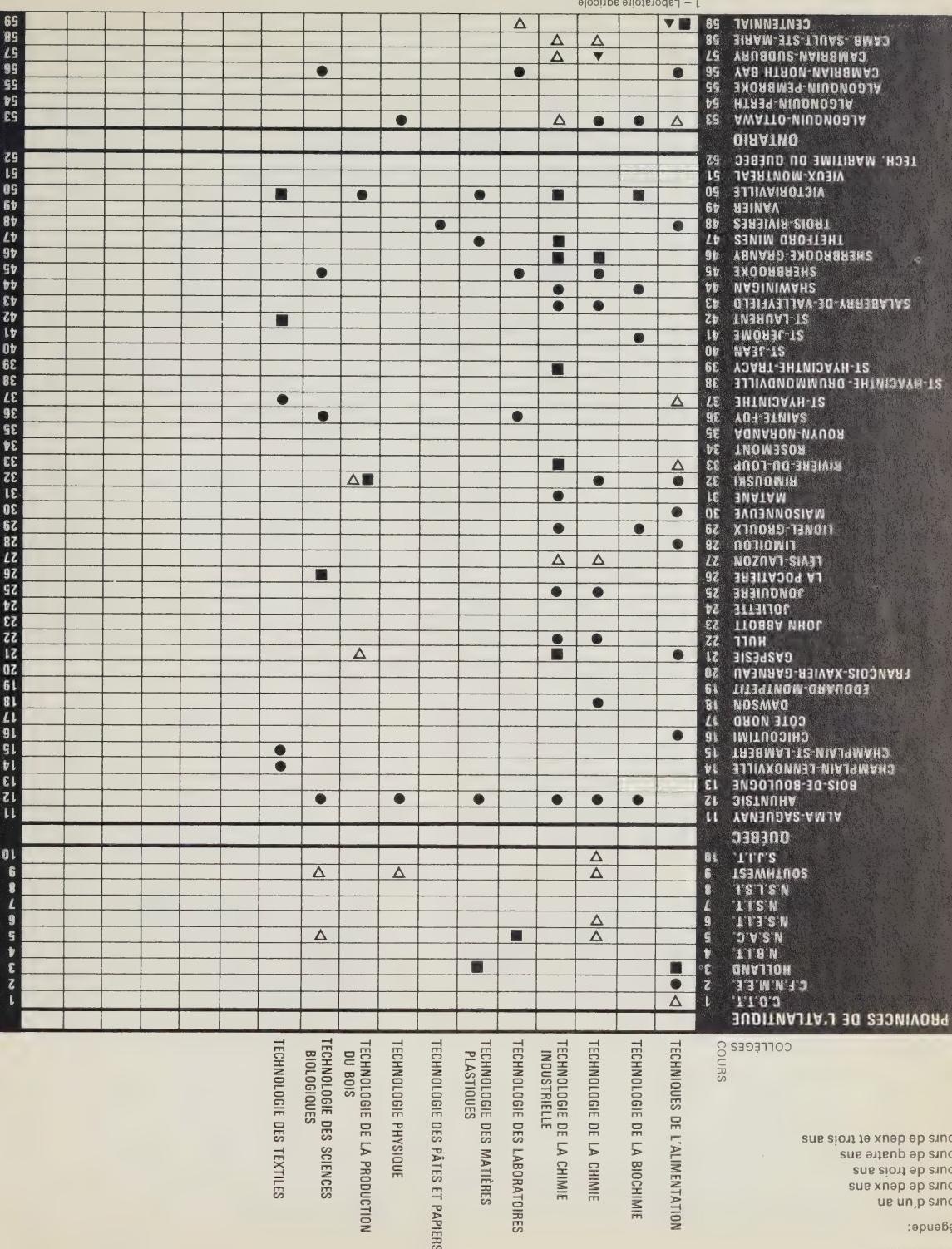
ONTARIO (suite)

| | COURS | COLLEGES |
|-----------------------------|-------|-----------------------------|
| CONFEDERATION | 60 | CENTRALIA AGRIC |
| DURHAM | 61 | GEORGIAN |
| FANSHAWE | 62 | GEORGIAN |
| GEORGIAN | 63 | GEORGIE BROOKS |
| HMBEEB | 64 | KEMPVILLE AGRIC |
| LAMBERTON | 65 | MORHAMK |
| LOYALIST | 66 | NEW LISKEARD |
| NAGARA-WELLAND | 67 | NAGARA-KIRKLAND LAKE |
| NORTHERN HALIBUT BURY | 68 | NORTHERN HALIBUT BURY |
| NORTHERN KIRKLAND LAKE | 69 | NORTHERN TIMMINS |
| RIDGEFORD AGRIC. | 70 | NORTHERN TIMMINS |
| RYEFIELD | 71 | ST-CLAIR-CHATHAM |
| S-CLAIR-WINDSOR | 72 | ST-LAWRENCE BRACKLIE |
| SENECA | 73 | ST-LAWRENCE KINSEYTON |
| SHREWDAN-BRACKLIE | 74 | SHEIRDAN-DAWVILLE |
| SHEIRDAN-MISSISSAUGA | 75 | SIR S. FLEMING-COBOURG |
| SIR S. FLEMING-LINDSAY | 76 | SIR S. FLEMING-PETERBOROUGH |
| SIR S. FLEMING-PETERBOROUGH | 77 | SIR S. FLEMING-TIMMINS |
| ST-LAWRENCE CORNWALL | 78 | ST-LAWRENCE CORNWALL |
| ST-LAWRENCE BRACKLIE | 79 | ST-LAWRENCE KIRKLAND LAKE |
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| ST-LAWRENCE KIRKLAND LAKE | 85 | ST-LAWRENCE KIRKLAND LAKE |
| SENeca | 86 | ST-LAWRENCE KIRKLAND LAKE |
| SHREWDAN-BRACKLIE | 87 | ST-LAWRENCE KIRKLAND LAKE |
| SHEIRDAN-DAWVILLE | 88 | ST-LAWRENCE KIRKLAND LAKE |
| SHEIRDAN-MISSISSAUGA | 89 | ST-LAWRENCE KIRKLAND LAKE |
| SIR S. FLEMING-COBOURG | 90 | SHEIRDAN-MISSISSAUGA |
| SIR S. FLEMING-LINDSAY | 91 | SHEIRDAN-MISSISSAUGA |
| SIR S. FLEMING-PETERBOROUGH | 92 | SHEIRDAN-MISSISSAUGA |
| SIR S. FLEMING-PETERBOROUGH | 93 | SHEIRDAN-MISSISSAUGA |
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| SIR S. FLEMING-TIMMINS | 100 | SHEIRDAN-MISSISSAUGA |
| FARMSIDE 101 | 101 | SHEIRDAN-MISSISSAUGA |
| GRAND PRAIRIE 102 | 102 | SHEIRDAN-MISSISSAUGA |
| LETHBRIDGE 103 | 103 | SHEIRDAN-MISSISSAUGA |
| RED DEER 104 | 104 | SHEIRDAN-MISSISSAUGA |
| MOUNT ROYAL 105 | 105 | SHEIRDAN-MISSISSAUGA |
| NAVAL 106 | 106 | SHEIRDAN-MISSISSAUGA |
| OLDS 107 | 107 | SHEIRDAN-MISSISSAUGA |
| REDDEER 108 | 108 | SHEIRDAN-MISSISSAUGA |
| SALIT 109 | 109 | SHEIRDAN-MISSISSAUGA |
| VERMILLION 110 | 110 | SHEIRDAN-MISSISSAUGA |
| B.C.I.T. 111 | 111 | SHEIRDAN-MISSISSAUGA |
| CRABWOOD 112 | 112 | SHEIRDAN-MISSISSAUGA |
| DUGLASS 114 | 114 | SHEIRDAN-MISSISSAUGA |
| MASSAS 115 | 115 | SHEIRDAN-MISSISSAUGA |
| OKLAHOMA 116 | 116 | SHEIRDAN-MISSISSAUGA |
| SELKIRK 118 | 118 | SHEIRDAN-MISSISSAUGA |
| VICKERS 119 | 119 | SHEIRDAN-MISSISSAUGA |
| V.S.A. 120 | 120 | SHEIRDAN-MISSISSAUGA |

TECHNIQUES DE L'ALIMENTATION
 TECHNIQUE DES PÂTES ET PAPIERS
 TECHNIQUE PHYSIQUE
 TECHNIQUE DE LA PRODUCTION
 TECHNOLOGIE DES SCIENCES
 TECHNOLOGIE BILOGIQUES
 TECHNOLOGIE DES TEXTILES
 TECHNOLOGIE DES MATERIÈLES PLASTIQUES
 TECHNOLOGIE DES LABORATOIRES
 TECHNOLOGIE DES MATIÈRES PLASTIQUES
 TECHNOLOGIE DES PÂTES ET PAPIERS
 TECHNOLOGIE PHYSIQUE
 TECHNOLOGIE DE LA PRODUCTION
 TECHNOLOGIE DES SCIENCES
 TECHNOLOGIE BILOGIQUES
 TECHNOLOGIE DES TEXTILES

TECHNIQUES DE L'ALIMENTATION
 TECHNIQUE DES PÂTES ET PAPIERS
 TECHNIQUE PHYSIQUE
 TECHNIQUE DE LA PRODUCTION
 TECHNOLOGIE DES SCIENCES
 TECHNOLOGIE BILOGIQUES
 TECHNOLOGIE DES TEXTILES

- 1 - Laboratoire agricole
- 2 - Première année seulement
- 3 - Pour les perspectives de carrière - Universités
- 4 - Programme de transfert



-égende:

de la production.

L'industrie canadienne des textiles est l'une des plus avancées au monde quant à l'organisation technique

sein de leur personnel.

acceptent les candidats éventuels à une carrière au sein de l'entreprise. Les entreprises une main-d'œuvre semi-qualifiée, les plus de recevoir la partie de la production industrielle. En effet, des compagnies permettent à ces élèves d'acquérir une expérience dans le travail avec des matériaux et des machines. A cet effet, des compagnies de textiles. Certains collèges exigent de leurs élèves qu'ils travaillent auprès de manufactures durant les vacances d'été, certains collèges exigent

Plastiques

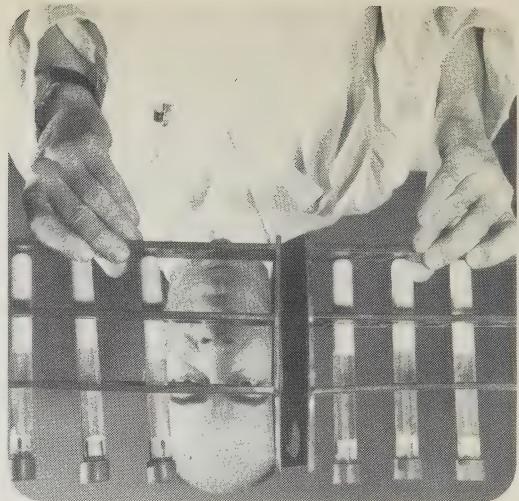
Textiles

Laboratories

L'instaration de nombreux laboratoires est devenue un véritable succès dans les domaines de la recherche et de l'innovation. Ces institutions ont joué un rôle d'assistant de recherche, le technologue doit être en mesure d'évaluer les techniques particulières aux divers secteurs de la recherche. Elles ont également contribué à la survie de l'industrie française à la fin des années 1980, grâce à leur capacité à développer de nouvelles technologies et à innover dans divers secteurs.

La formation du technologue de laboratoire demande de la part de l'élève une certitude dans les sciences biologiques, chimiques, et physiques. Ceci lui permettra d'aborder plus facilement des études possèses en ces sciences. Les programmes de formation dispensées par plusieurs collèges se présentent en deux types, séparés en général sur deux ou trois ans. La première phase se réserve l'étude approfondie des sciences fondamentales telles la chimie, la biologie, les mathématiques et la physique. Dans les seconds années, l'élève se familiarise avec les différentes techniques de laboratoire, les équipements spécialement aux recherches et aux modalités particulières propres aux établissements de recherche. La phase finale unit le travail de la recherche, les équipements spécialement aux recherches et aux modalités particulières propres aux établissements de recherche. L'élève obtient une licence en chimie, en biologie et en médecine. A ce niveau, il élève saura mieux déterminer ses goûts et ses intérêts et ainsi pourra mieux prévoir une spécialité.

Les employeurs des diplômes en technologie des labo-
ratoires se retrouvent surtout parmi les gouvernements, les entreprises pharmaceutiques et de plus part dans les hôpitaux, et de plus partout dans le pays. Les emplois dans l'industrie pharmaceutique sont ouverts à ces diplômes. En fait, un assez bon nombre de car-
rieres intéressantes sont ouvertes à ces diplômes.



Vu un manche du travail plutôt restérent, actuellement, pour la plupart des frimessans, le travail qui fut n'est pas un choix, mais il s'agit d'un accès au travail souvent laissé ouverte qui offre à eux, alors, comment peut-on reprocher au sens suivit de ne pas rencontrer les objectifs prévus, quand les gens qui l'ont suivi ne sont même pas placés dans le milieu pour lequel ils sont destinés ?

S'uvwxyzant le but du cours, Celle-ci se trouve directement dans le meilleur de travail, elle doit analyser des échantillons selon certaines méthodes, en se servant d'appareils nécessaires. Elle assiste le chimiste, Bertrand appelle son collègue, il sagit plutôt pour elle de préparer un analyse. Il travaille toujours en chimie, mais ramènera ces résultats pour elle de préparer syn-thèses et réactions qu'on utilise pour faciliter l'étude de la chimie théorique et de disposer le matériel de labo- ratoire pour les étudiants. Quant à Clemont, il s'éloigne des produits manufacturés soumis à des velléités de la formation principale; il effectue divers tests sur des simulés, ce qui revient à l'application de principes de physique.

Les diplômes des programmes collégiaux sont en mesure de transmettre des industries chimiques telles que les industries pétrochimiques, métallurgiques, allumentaires, pharmaceutiques et celles des plâtres et papiers. Ils peuvent aussi travailler dans des secteurs tels la production, la vente ou le contrôle de la qualité, les laboratoires de recherche des universités, des goulvernementaux et les laboratoires d'analyse en milieu marin. Cependant, le diplôme fait face à un marché du travail hospitalier offrant aussi des débouchés intéressants.

Le candidat détient un diplôme de postuniversitaire en programme d'étude, doit posséder un diplôme d'études secondaires et avoir réussi des cours de français, de chimie, de mathématiques et de physique. L'ensemble de la technologie de la chimie porte sur les divers aspects de la chimie, soit organiques, inorganiques, industrielles et physiques. Aussi fait-il place aux méthodologies, à la mécanique, à l'électricité et à la physique. De plus, les études des principes qui résultent de l'auto-ressort progressif nouvelles permet aux diplômés de s'adapter aux conditions nouvelles résultant de l'auto-

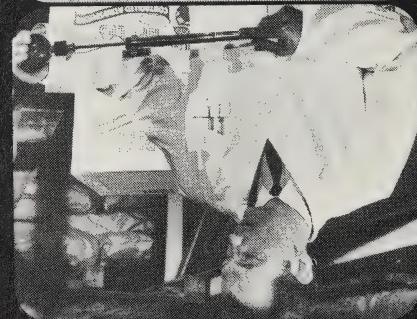
matique. Ces programmes sont dispensés dans de nombreux collèges canadiens et la durée des études, bien qu'elle varie d'un collège à l'autre, est de trois ans. Les diplômes, après expérience pratique, peuvent le faire devenir technologue en chimie décerné par l'Institut de technologie du Canada, leur procureur ainsi que le diplôme, après expérience pratique, reçus par l'Académie professionnelle dans le domaine de la chimie.

Les diplômes de la technologie de la chimie ouvrent dans deux domaines très importants, soit la recherche ou l'amélioration de produits d'usage courant, soit la production industrielle. Les fonctions occupent ces technologies sont multiples. Le technicien analyse prépare et purifie de nouveaux produits, met au point des méthodes originales d'analyse ou de fabrication, étudie de nouvelles utilisations d'un produit donne, effectue les divers types d'analyses nécessaires pour retrouver les substances dans le fonctionnement des appareils, réagit des rapports concis de clients. Le technicien en chimie-procédé agit en tant que technicien de produc- tion ou de recherche, technique d'une pilote, assis- tante-chimiste, contremaître ouvrier d'une usine chimique ou d'une usine chimiques dans la vente ou la présentation technique.

Le technicien en chimie-procédé utilise ses connaissances dans les procédés industriels ou scientifiques dans la vente ou la présentation technique.

Alimentation

Collèges



Tech'niqe bio-chimiques

L'enseignement collégial propose aux élèves un ensemble complet de programmes qui donnent une idée précise et accueillie de l'importance de ces disciplines scientifiques dans le monde moderne. Les travaux de laboratoires, tout en permettant aux élèves d'acquérir une certaine dextérité manuelle, leur font apprécier de leur façon concrète la matière utilisée.

Le premier objectif du secteur des techniques biologiques et chimiques s'exprime dans une prise de contact avec les grands problèmes actuels. Un deuxième objectif est l'observation d'une certaine connaissance de la terminologie, des concepts et des théories utiles. Lorsque l'étude aura complète l'un ou l'autre des programmes collégiaux, il sera alors possible de faire preuve d'un esprit plus ouvert sur les problèmes actuels.

Le secteur des techniques biologiques et chimiques offre à ses étudiants une somme de droits individuels très développés et une grande autonomie dans leurs études. Leur étude de la technique biologique et chimique peut être effectuée soit en angle théorique soit pratiquement, soit expérimentalement. Ces deux approches sont complémentaires et peuvent être utilisées de manière indépendante ou ensemble.

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Physique

Les ouvertures sur le marché du travail sont délicates, mais pas nécessairement limitées. Chaque pour les autres sciences, le problème de l'investissement à la recherche constitue une impasse. Cependant, une plus grande concentration et intégration des métiers uni-versitaires, gouvernements, industries et financeurs permettra de sortir de cette impasse. Heureusement, cette tendance semble être marquée au Canada, et toutes les sciences, non seulement en physique, en biologie et en sciences, sont enfin dans la même direction. Le diplôme en physique pourra donc donner plus facilement à la recherche tant à l'industrie qu'à l'université.

La physique est une discipline fondamentale qui se propose d'analyser et de la comprendre dans le sens où elle étudie la matière et les lois qui gouvernent les phénomènes naturels.

Elle a donc pour objectif les propriétés générales de la matière et cohérent de la nature de ces choses.

Portrait logique et déterminer un relations entre les parties, et tend à déterminer un physiques. Elle étudie la matière et l'énergie, leurs univers comme tel dans toutes ses manifestations de l'univers à l'atome, au niveau à partir du niveau microscopique de l'atome, au niveau de l'univers comme tel dans toutes ses manifestations physiques. Elle étudie la matière et l'énergie, leurs relations entre les parties, et tend à déterminer un portait logique et cohérent de la nature de ces choses.

Matière et loi qui gouvernent les phénomènes naturels.

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Mathématiques

On divise communément les mathématiques en mathématiques pures et mathématiques appliquées, même si la ligne de partage n'est pas toujours claire. En effet, dans une discipline comme la physique, sans se référer à des applications précises. A la base, sans se référer à des éléments d'analyse ou d'algèbre dont tout mathématicien connaît l'existence, mais qui n'ont pas d'autre utilité que de servir de base pour d'autres théories. Les mathématiques appliquées sont donc celles qui traitent des problèmes pratiques, sans être liées à une théorie mathématique particulière. Elles sont utilisées pour résoudre des problèmes pratiques, tels que la construction d'un pont ou la conception d'un avion. Les mathématiques pures, en revanche, sont celles qui étudient les propriétés fondamentales des nombres et des formes, sans se préoccuper de leur application pratique. Elles sont utilisées pour démontrer des théorèmes mathématiques, pour développer de nouvelles théories et pour résoudre des problèmes abstraits.

Présidue toutes les universités canadiennes offrent des programmes complets en mathématiques. L'admission aux programmes du premier cycle exige, en général, un diplôme d'études secondaires ou collégiales, avec certaines cours en sciences mathématiques. Le deuxième cycle exige une matrice et une préparation équivalente.

Elles étudient essentiellement les structures abstraites et leurs relations, et de plus en plus de disciplines silencieuses y ont recours comme langage pour décrire les phénomènes du monde depuis des siècles, mais aujourd'hui, la physique le fait depuis des milliers d'années. On se sent dans le théâtre de la mesure en économie, d'algèbre en linguistique, et peut-être bientôt de topologie en biologie.

Sur le marché du travail, les ouvertures pour les diplômes en mathématiques sont parmi les meilleures. Les universités possèdent des programmes de travail qui ont été élaborés pour répondre à la demande de diplômés en mathématiques. Les universités offrent également des programmes de formation continue et des formations spécifiques pour les diplômés en mathématiques. Les diplômés en mathématiques sont également recherchés dans l'industrie, les compagnies d'assurance, les banques, les assurances, les entreprises de conseil et les entreprises de recherche et développement.

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Un exemple à souligner, entre autres, concerne le domaine du génie aéronautique où la Vitesse de la lumière des ordinateurs sont utilisées dans des systèmes de dépistage pour observer et contrôler des satellites ou missiles, lors de leur lancement ou après leur mise en orbite. Partout dans le monde, des radars balaiant continuellement le ciel, déterminant la direction, l'altitude et la distance des objets qui se meuvent à l'intérieur de leur rayon d'action. Ces informations sont utilisées dans les trajectoires de chaque objet, les calculs sont faits pour déterminer la trajectoire de la projectile et pour déterminer la date et l'heure de l'impact. Les missiles, si, lors du lancement d'un nouveau missile, il survient une erreur de trajectoire, l'ordinateur analyse la corrigie.

Avant qu'un système puisse être utilisé, chaque détail doit être mis au point par l'analyste. En plus de décrire comment le radar relèvera l'information captée, l'analyse doit encore établir les calculs nécessaires et la liste doit encore servir de l'ordinateur. Une opération aussi complexe exige plusieurs analystes, soit un pour chaque tâche.

Si de nos jours, l'attention se porte surtout sur l'exploitation aérospatiale, c'est en grande partie grâce aux vols Apollo et à l'exploration du sol lunaire. Mais il ne faut pas oublier que l'ordinateur joue aussi de très grands rôles dans l'industrie. L'acier par exemple, qui entre dans l'usine sous forme de ferreux pour être transformé en essieu pour automobile, est transformé en essieu pour machine. C'est ainsi que l'analyse doit imprimer à la machine de la vitesse et la précision requise pour automobilistes. D'autre part, l'industrie des informatiques, qui a été créée pour aider les scientifiques à résoudre des problèmes mathématiques, est transformée en essence pour aider les scientifiques à résoudre des problèmes mathématiques. C'est ainsi que l'analyse doit imprimer à la machine de la vitesse et la précision requise pour automobilistes.

Le rôle de l'analyse des systèmes dans les applications scientifiques et technologiques est d'indiquer la meilleure façon d'utiliser l'ordinateur pour résoudre des problèmes de conception de missiles, de physique nucléaire, de systèmes de détection électronique et de machines de commande industrielle. Il joint aux ingénieurs de tous secteurs pour définir un problème de conception de missiles pour détruire des systèmes de défense antimissile. L'ordinateur est devenu une partie importante de la vie quotidienne dans les centres de calcul et de calcul des services. Ces centres offrent des services privés et les unités de calcul possèdent leurs propres systèmes de gestion. Dans ces centres, l'analyse ensemble électronique. Dans ces centres, l'analyse à grande variété de systèmes, travaille à une plus grande variété de systèmes.

Information

Les problèmes du traitement des données sont si nombreux et si variés que les analystes des systèmes doivent également être spécialisés. Certains s'occupent tout simplement de systèmes de gestion qui traitent les informations pour les entreprises ou les institutions publiques et privées. D'autres se spécialisent dans les méthodes utilisées en affaires telles la compétibilité ou le contrôle des stocks ou alors dans d'autres domaines à savoir les transports, les communications et la recherche et développement. D'autres se spécialisent dans les marchés et l'ensemble du secteur des transports et des communications. Les grands employeurs se classent parmi les institutions financières comme les banques et les compagnies d'assurances, les gouvernements fédéraux, municipaux et provinciaux. D'autres diplômés ouvrent dans les entreprises de transports, les services publics et dans les institutions scolaires.

Il y a moins de 20 ans, le lacetement de l'homme dans l'espace appartenait au domaine de la science-fiction. Des sous-jours, en grande partie grâce aux ordinateurs, il suffit d'une réalité. Beaucoup d'astronautes ont été mis en orbite autour de la Terre et l'imagination lunaire est chose courante. Bien que les ordinateurs jouent un rôle clé dans le développement de la technologie spatiale, ce n'est là qu'un de leur nombreux usages.

L'utilisation croissante de matériel pour le traitement des données est une des tendances les plus importantes de notre siècle. Les applications ordinaires varient de plus en plus chaque année. Les réserves de lignes aériennes, le report des dépôts bancaires, les extrapolations de la Bourse et les prédictions météorologiques ne sont que quelques exemples.

Capable de faire une addition en quelques millions de secondes, cette machine peut effectuer avec une calculatrice de bureau.

Quelques minutes, exécuter une série d'opérations en quelques minutes, exécuter une calculatrice de bureau.



d'administrateurs démeurent accessibles aux chimistes. Enfin l'électrochimie, la métrologie et la photochimie constituent des secteurs qui seraient susceptibles de recruter un bon nombre de diplômés.

Plusieurs universités canadiennes dispensent des programmes de chimie, à tous les niveaux, qui permettent aux étudiants de se familiariser avec les théories, les principes et la pratique de la chimie. Un diplôme d'études secondaires ou selon la province, un diplôme d'études collégiales, connaissances fondamentales en chimie, en physique et en mathématiques, sont les critères de base pour s'inscrire à ces programmes. Les étudiants choisissent parmi plusieurs sécours de spécialisations, tels la chimie analytique, la structure, macromoléculaire, polymère et de physique. Plusieurs universités offrent un programme interdisciplinaire, tels les universités McGill et de l'Alberta. L'étudiant inscritra la chimie en programme interdisciplinaire, telles les universités McGill et de l'Alberta. L'étudiant inscritra la chimie en programme interdisciplinaire, telles les universités

La chimie se penche sur l'étude de la composition de la matière et de la transformation de ses composantes, pour créer de nouveaux produits. La chimie étudie donc la composition, la structure, les transformations et les modes de transformation de la matière, et les changements énergétiques associés à ces transferts. Les transformations chimiques sont essentielles dans la création de matériaux. La chimie constitue un défi intellectuel et nécessite une force dominante dans la création de l'avenir plus directement liée au monde futur. Un rôle social lui donne une importance nouvelle et des approches nouvelles.

Astronomie

Les mathématiques et la physique étant nécessaires à l'astronomie moderne, les universités appliquent des programmes sur ces deux disciplines pour la formation du futur diplôme. La plupart des universités canadiennes offrent un cycle de quatre ans en mathé- maticques et en physique. Lots de la dernière année, le candidat peut se spécialiser en astrophysique. Par la suite, étant recommandé par les divers employeurs, le diplôme peut se diriger vers la matière et le docteurat. Dans les années qui viennent, avec le rapide développement de l'astronomie radioélique et l'exploration spatiale, les recherches astronomiques augmenteront la demande des ingénieurs électroniques et aéronauts.

D'autres par contre s'occupent de la position, du mouvement, de l'activité des étoiles. Leur travail est loin de la routine. L'opération automatique des télescopies et le calcul effectué par les ordinateurs sont des méthodes tout à fait nouvelles qui permettent d'obtenir des résultats très précis. Ces dernières années, les observations astronomiques ont connu une évolution importante. Les télescopes terrestres et les instruments spatiaux ont permis d'observer des objets célestes jusque-là inaccessibles. Les observations planétaires, en particulier celles de Mars et de Jupiter, ont été réalisées avec une précision sans précédent. Les observations solaires ont également progressé, grâce à l'utilisation de télescopes solaires et de satellites. Les observations lunaires ont également été réalisées avec succès, grâce à l'utilisation de télescopes lunaires et de satellites.

La situation est la suivante qu'arrive-t-il dans les positions relatives, des mouvements, de la constitution et l'évolution de la terre, de la lune, des planètes, du soleil et des autres composants du système solaire, des étoiles, des nébulosites, et des galaxies de l'univers.

Actuariat

familialiser avec les principes des mathématiques d'études secondaires et collégiales; l'école devrait se les études en actuariat s'appuient sur un diplôme

parois diriger le traitement des données.

Inclus de la programmation et encore doivent-ils inclure des systèmes électroniques, avec les techn-

d'ordinateurs. Les actuaires se familiarisent donc avec les prévisions futures se font en grande partie à l'aide

des assurances. Le calcul des domaines de réputation aux besoins de la société actuelle dans le domaine des

nouveaux programmes qui puissent mieux répondre aux besoins du marché. Ils élaborent en conséquence de

n'importe quelles économiques, or l'industrie de l'assurance aider les compagnies à s'accaparer du plus grande

nombre d'actuaires dans le secteur de l'assurance

l'expansion industrielle se fonde sur une exploitation

des effets de la conjoncture économique.

Les étudiants des rapports financiers en plus d'analyser

l'achet d'obligations, d'actions, d'immobilés; et

l'opération de son avoir une compagnie consacrera à

la question de l'assurance, et en même temps, il se

présente habituellement à des examens pour devenir membre des associations d'actuaires et obtenu une

accréditation professionnelle.

Des obtention de son grade, le diplôme pratique

à un stage pratiquée en tant qu'étudiant actuarien

à actuaire débute au début d'une compagnie d'assurance ou

ou dans une firme d'assurance-vie, d'assurance-maladie

et d'assurance tous risques. Certains exercent à leur

compte personnel, à titre d'actuaire conseil et leur

compagnies d'assurance

ou dans une compagnie d'assurance à payer les prestati-

oires et autres sources suffisent à assurer les prestati-

oires actuaires s'assurent que les revenus provenant des

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Les actuaires de renseignements qu'utilisent les actuaires

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des connaissances qui ouvrent dans ces deux sortes d'assu-

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L'industrie de l'assurance connaît un essor considé-

able depuis peu de temps.

L'étudiant suit tout des cours en probabilité et en statistique. Il

s'initie aux principes de l'assurance, à l'administration

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Plusieurs universités canadiennes dispensent des

programmes en actuariat. Centaines d'entre elles,

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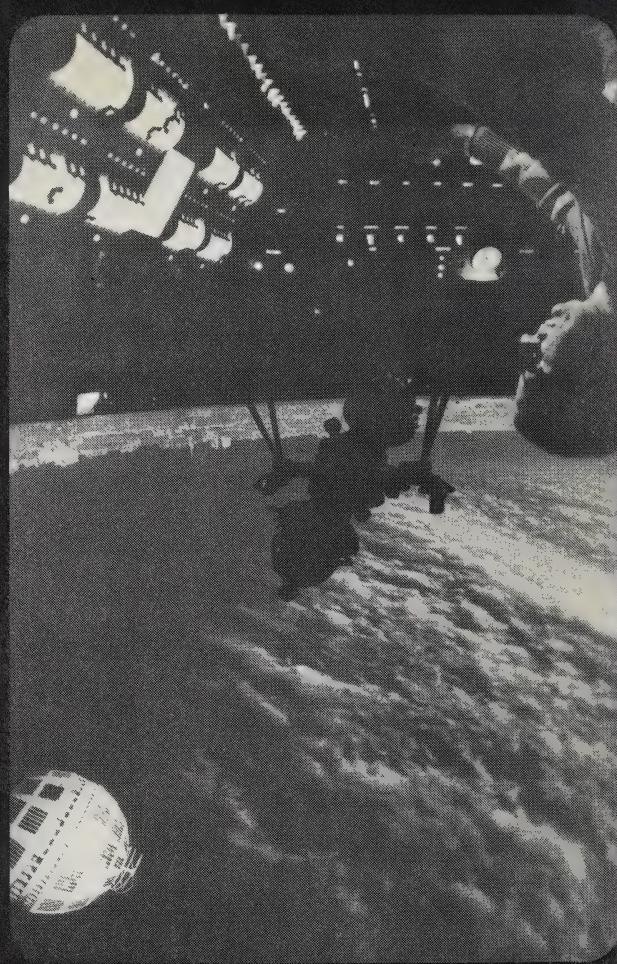
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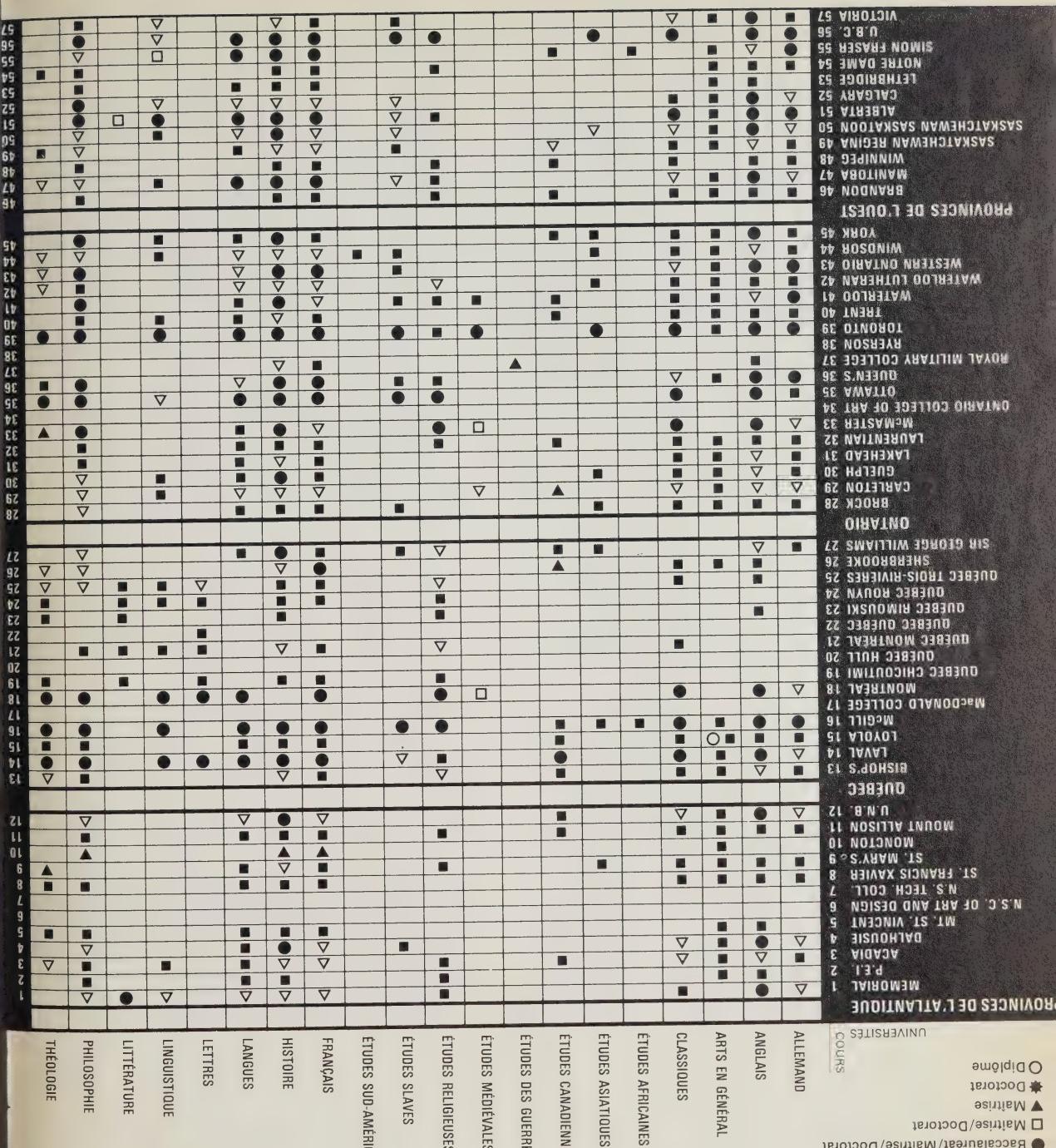
Mathématiques et physiques

Universities

Sciences mathématiques et physiques a amélioré d'une façon prodigieuse les techniques industrielles, et par le fait même notre niveau de vie. Bien que ce progrès soit plus évident dans les domaines de l'information, la recherche dans toutes les sciences a eu des effets formidables. La marche du progrès laisse encore plus nombreux problèmes ainsi que des défis encore plus formidables.

Les astrophysiques sont essentielles à la solution de ces problèmes et aux progrès technologiques. Le savant qui occupe un poste de recherche ou de professionnalisation possède habituellement un diplôme d'études supérieures. Cependant, le titulaire du baccalauréat, trouve des emplois intéressants dans l'industrie, dans l'en- sagement, dans les laboratoires d'analyse ou d'ingénierie, dans les sciences pharmaceutiques, chimiques ou autres. Les sciences mathématiques et physiques connaissent longtemps d'être à la fine pointe de la recherche moderne.





L'aumônerie d'hôpital, d'université, de tout établissement peut aussi s'adonner à la consultation matrimoniale, il peut aussi s'adonner à la consultation matrimoniale, aux relations publiques, au journalisme. Les ouvertures dans l'enseignement, dans la consultation d'aménagement et dans les gouvernements provinciaux et fédéral restent nombreuses. Enfin, le travail missionnaire à l'étranger demeure une alternative.

Theologie

Philosophie

La philosophie de l'information suscite un intérêt croissant dans le domaine des sciences de l'information et de la communication. Cet article présente une perspective de la philosophie de l'information qui met en évidence les similitudes entre la philosophie de l'information et la philosophie traditionnelle. Il montre que la philosophie de l'information peut contribuer à l'évolution de la philosophie traditionnelle. La philosophie de l'information est une discipline qui étudie les propriétés fondamentales des systèmes d'information et leur interaction avec l'environnement. Elle se concentre sur les aspects qualitatifs et quantitatifs des informations et leurs implications pour la compréhension et la manipulation du monde réel. La philosophie de l'information est étroitement liée à la philosophie de l'esprit et à la philosophie de l'art. Elle examine les rapports entre la philosophie de l'information et d'autres disciplines telles que la logique, la métaphysique, la philosophie de l'art et la philosophie de l'histoire. La philosophie de l'information est également étroitement liée à la philosophie de l'information et à la philosophie de l'information. Elle examine les rapports entre la philosophie de l'information et d'autres disciplines telles que la logique, la métaphysique, la philosophie de l'art et la philosophie de l'histoire. La philosophie de l'information est également étroitement liée à la philosophie de l'information et à la philosophie de l'information.

Littérature

titre de critique littéraire ou de rédacteur. Ils peuvent se consacrer dans l'édition, l'enseignement, les relations publiques, la traduction et les relations commerciales ou diplomatiques.

L'écriture a pour un des premiers instruments pour conserver et diffuser les connaissances humaines. L'imprimé marqua une révolution dans les systèmes de communication humaine. Depuis lors, la littérature comme modes d'expression porte sur l'étude des genres littéraires, et déborde considérablement. L'enseignement universitaire porte l'étude des systèmes culturels et civiliations. Elle caractérise la flexibilité innovatrice et créative de l'homme. La littérature assume ainsi un rôle de témoin de l'évolution de la pensée de l'homme, et anime le développement à savoir le roman, la poésie, la théâtre et la nouvelle. Ces cours définissent une théorie de ces littératures et savent à quoi servir la littérature. Les cours dispensent également l'étude des différents mouvements culturels. L'étude des différents genres pouvant le conduire jusqu'au doctorat. Les cours dispensent des modes d'expression.

Presque toutes les universités canadiennes dispensent des programmes d'étude en littérature. Les conditions d'admission à ces programmes demandent les mêmes que les autres facultés universitaires, à savoir être détenir un diplôme d'études collégiales ou son équivalent. L'étudiant entre dans les études littéraires tout en suivant un programme d'études universitaires qui lui permet de suivre les cours de sa spécialité. Les cours dispensent littératures et de leurs auteurs les plus représentatifs tels le romantisme, le classicisme, le structuralisme et le symbolisme constitue une partie importante dans la forme comme celle. L'étude des différents mouvements littéraires et de leurs auteurs les plus représentatifs tels que les romanciers, selon la langue maternelle. Il devra également faire partie de la sémantique et la stylistique. Il devra au moins une langue secondaire, de préférence l'anglais ou le français, selon la langue maternelle. Plusieurs cours facultaires en philosophie, en sociologie, en psychologie et en littérature sont également offerts.

De même, lorsqu'il étudie son rôle les procédures littéraires tant au niveau du contenu que du contexte, il utilise une sémantique et la stylistique. Il devra au moins une langue maternelle, de préférence l'anglais ou le français, selon la langue maternelle. Plusieurs cours facultaires en philosophie, en sociologie, en psychologie et en littérature sont également offerts.

Les diplômes en littérature font partie de la littérature en jargon. Les diplômes en littérature sont avortés ou ouverts. Les diplômes en littérature sont avortés ou ouverts. Les diplômes en littérature sont avortés ou ouverts.

Linguis**tique** Langues

Les langues, les émotions et la communication ou collaboratif des débats

Les controverses autour de la légitimité scientifique de la linguistique ont été débattues depuis les dernières décennies. Elles discutent en effet de la légitimité scientifique de la linguistique autonome, utile à la compréhension de l'homme. De fait, la linguistique se propose l'étude du phénomène universel de langage comme expression culturelle humaine. Elle analyse les domaines communautaires des toutes les langues soit un terme précisément de toute langue. Sa méthode est essentiellement empirique, retenant comme objet de son étude le langage historique, savant ou d'autre part la dimension diachronique d'une partie ou d'autre de la dimension synchronique. Deux grandes tendances caractérisent la linguistique moderne, l'école soit la bagage théorique de classes-clé fruit de l'observation, soit la dimension synchronique de classes-clé, fruit de l'empirisme. La linguistique cherche donc à découvrir les mécanismes de la communication humaine, utile à la compréhension de l'homme, mais aussi à la transformation sociale.

L'enseignement des langues a connu de nombreux rebondissements ces dernières années, tant par la législation sur le bilinguisme que par la prise de certains accords politiques entre les deux provinces et culturel. Le Canada, un pays à caractère multilingue et multiculturel, a été confronté à l'enseignement des langues d'un pluralisme linguistique et culturel. L'enseignement des langues a connu de nouvelles perspectives de l'enseignement des langues.

Histoire

L'histoire ne se borne plus à la simple narration des événements passés, c'est une scène humaine qui a pour objet l'étude des hommes vivant en sociétés. L'œuvre de l'historien doit d'étudier ce qui caractérise les groupes humains dans le temps et dans l'espace et d'expliquer les changements, les transformations et les mutations des sociétés à travers les âges. En conséquence, l'historien doit s'intéresser non seulement aux problèmes politiques et sociaux, aux aspects culturels et religieux, mais aussi aux problèmes économiques, aux moyens d'une méthode historique qui utilise les documents et leur utilisation pour démontrer la continuité ou la discontinuité de l'histoire. La connaissance historique doit reposer sur la preuve de l'exactitude des sources documentaires et leur utilisation au moyen d'une méthode rigoureuse nécessitant l'écherche de sources documentaires et leur utilisation pour démontrer la continuité ou la discontinuité de l'histoire.

La plupart des universités canadiennes offrent des cours de premier cycle dans centre discipline, et bon nombre d'entre elles ont des départements d'histoire de l'art qui sont très spécialisés en vue de l'application des programmes d'études supérieures couvrant la matière ou d'un doctorat. Ces programmes compotent des cours magistériels et des séminaires de recherches qui couvrent l'histoire des civilisations, pays ou nations, depuis l'Antiquité jusqu'à nos jours, et portent sur des problèmes d'histoire - marquées historiques nécessite le développement de sciences humaines telles que les sciences politiques, la démographie, la sociologie, la géographie et la démographie.

La enseignement, du niveau secondaire au niveau universitaire, la propagataion de l'enseignement des langues slaves offre beaucoup d'ouvertures. Aussi étudiant peut être bicultural à des postes gouvernementaux et aux missions diplomatiques. Il peut aussi être traducteur tant qu'il possède une bonne connaissance de l'anglais et de l'espagnol. II peut aussi être chercheur tant qu'il possède une bonne connaissance de l'anglais et de l'espagnol. II peut aussi être ministre des affaires extérieures et de l'immigration.

Études canadiennes

Etudes asiatiques

Etudes africaines

Classiques



Universities

Humanities



Le champ d'activité du zoologue est si diversifié que chaque individu peut choisir un domaine de travail qui correspond à ses goûts. À ses aptitudes et à ses spécialités, l'étudiant qui désire se spécialiser en zoologie poursuit des cours en relation directe avec son choix.

De façon générale, l'étudiant choisit un programme commun en biologie qui comporte des cours de physiologie, de chimie, de mathématiques et de matières de base, telles que les branchedes de la biologie. Par la suite, l'étudiant qui touche les domaines de la zoologie et de la zoogéographie, passe à une variété de cours qui lui sont propres. Il étudie les cycles des études qui conduisent à une spécialisation en zoologie.

Puisqu'il existe de nombreuses carrières offertes au diplômé, dans la fonction publique et l'industrie, il existe de nombreux domaines d'études supérieures.

La zoologie s'occupe de l'origine, de la classification, de la morphologie, du comportement, des processus vitaux, des maladies et des parasites dans le monde animal. Elle étudie les groupes dont les animaux, vivant seuls ou en groupes, influent sur leur environnement et subissent un même temps son influence.

Les zoologues étudient et expérimentent toutes les formes de vie animale. Ils examinent les conditions de subsistance de techniques, ils enregistrent des observations de terrain des dossier. Le travail peut se faire dans des salles de classes et dans des laboratoires de recherches, dans des enclos ou dans des lieux naturels ou vivant les animaux. En laboratoire, il compare les candidats désireux de s'inscrire à un programme universitaire en biologie vise spécification en zoologie diplôme possède une formation jugée équivalente à deux années d'études collégiales selon la province choisie. Des tests secondaires, de chimie, de langues, de mathématiques et de physique.

Les candidats désireux de s'inscrire à l'examen de la documentation existante. Les étudiants exigés la rédaction de rapports, de communiqués scientifiques et l'examen de la documentation existante. Les candidats désireux de s'inscrire à un programme universitaire en zoologie doivent posséder une formation jugée équivalente à deux années d'études collégiales selon la province choisie. Des tests secondaires, de chimie, de langues, de mathématiques et de physique.

Physiologie

Vivres ou sciences de l'alimentation

Microbiologie et bactériologie

réparties au monde microbien. L'épendant, il aura aussi la possibilité de s'orienter vers la microbiologie appliquée ou ses connaissances fondamentales. L'aiderait à trouver la solution à de nombreux problèmes d'intérêt pratique.

En conclusion, selon sa formation initiale, ses aptitudes et ses goûts, le microbiologue peut choisir de faire carrière dans l'enseignement, la recherche, le diagnostic ou la production.

La microbiologie ou science de la vie microscopique comprend l'étude d'une variété extraordinaire de bactéries, virus, mycoplasmes, souches et cellules de champignons et bactéries. Cette étude a abouti à la création de disciplines telles que la virologie ou l'étude des virus, la mycologie ou l'étude des champignons et la protozoologie ou l'étude des protistines. Les différences entre les bactéries et les virus sont assez évidentes mais il existe quelques points communs entre eux. Tous deux sont extrêmement petits et peuvent être étudiés au microscope. La taille des virus est de l'ordre de 10 à 200 nanomètres, alors que celle des bactéries est de 0,2 à 10 micromètres. Les virus sont incapables de se reproduire par elles-mêmes et doivent se multiplier dans une cellule hôte vivante. Les bactéries, en revanche, sont capables de se reproduire de manière autonome. Elles peuvent se diviser par division cellulaire ou par division sexuelle. Les virus sont incapables de se déplacer et doivent être transportés par les bactéries ou par d'autres agents. Les bactéries sont également incapables de synthétiser leurs propres nutriments et doivent se nourrir d'autres organismes. Les virus, au contraire, sont capables de synthétiser leurs propres nutriments et peuvent être utilisés pour produire des médicaments contre certaines maladies.

Pour devenir microbiologiste, il faut d'abord être à niveau secondaire, soit au collège, soit au lycée. Pour devenir microbiologiste, il faut d'abord être à niveau secondaire, soit au collège, soit au lycée. Pour devenir microbiologiste, il faut d'abord être à niveau secondaire, soit au collège, soit au lycée. Pour devenir microbiologiste, il faut d'abord être à niveau secondaire, soit au collège, soit au lycée. Pour devenir microbiologiste, il faut d'abord être à niveau secondaire, soit au collège, soit au lycée.

Le nouveau diplôme évolue dans la sphère d'activité correspondante à sa discipline d'étude. Le microbiologie médical ou vétérinaire intègre tout parti pour les animaux et aux différentes méthodes pour prévenir les maladies et pour lutter contre les pathogènes pour l'homme et les animaux. Dans le domaine de la santé publique, les microbiologues jouent un rôle important dans les efforts visant à améliorer les conditions de vie et de travail des hommes et des animaux. Ils contribuent à l'amélioration continue des disciplines collaborent au développement des différents domaines de la médecine et de la science. Ils jouent un rôle essentiel dans la lutte contre les maladies et les infections, et contribuent à l'amélioration de la qualité de vie des hommes et des animaux. Ils jouent un rôle essentiel dans la lutte contre les maladies et les infections, et contribuent à l'amélioration de la qualité de vie des hommes et des animaux.

Dote d'une formation plus approfondie en microbiologie générale, le gradué de la faculté des Sciences se penche sur l'étude de tous les aspects fondamentaux

Botanique

Farmaci les carrières scientifiques, la Dotation offre une grande diversité. Il ne saurait en être autrement donné les manfestations multiples de la vie.

Les premières sessions sont consacrées principalement aux sciences fondamentales comme la chimie, les mathématiques, la physique, et aux principales matières botanique, les cours se divisent ensuite en trois périodes : assureront la base nécessaire à toutes les branches de la botanique. Les cours sont divisés en deux séries de programmes spéciales soit la taxonomie, la morphologie et la physiologie. Ces spécialités comprennent des cours obligatoires souvent communs à plusieurs domaines et elles ont des cours au choix.

Plusieurs universités canadiennes dispensent un programme en boraïndue dont les cycles d'études varient de deux à trois ans. Cette discipline a pour but de préparer les étudiants aux carrières en botanique, en et leur permettant, dans les dernières années, de s'orienter vers une discipline en botanique plus particulière.

Les élèves des écoles secondaires qui ont l'intention de poursuivre un programme d'étude en botanique auront avantagede à suivre des cours en biologie, en chimie, en physique, en mathématiques et en langues. Il est avantageux aussi de s'associer aux activités des cercles de naturelles. Pour participer au programme universitaire, il faut être le candidat dot posséder une formation jugée équivalente à un diplôme d'études secondaires ou, selon le cas, à deux années d'études collégiales.

Le Musée national du Canada, le Conseil national de recherches, l'Énergie atomique du Canada et les ministères de l'Environnement, de l'Agriculture, des Affaires indiennes et du Nord canadien emploient des nistres en qualité de neutralisés des pâtes. L'industrie des pâtes et papier, l'industrie du tabac et des semences commerciales cherche aussi des botanistes pour ces domaines. Un nombre croissant de botanistes travaillent à leur cent à l'ensemblage et la recherche dans les champs et en qualité de consultants. D'autres se consacrent à l'enseignement ou à la recherche dans les universités et les collèges.

Dans les stations périodiques d'environnement et de l'exploitation économique, le ministère de l'environnement et de l'exploitation économique peut tout faire dans les domaines économiques, sociaux et culturels. Il peut également prendre des mesures pour protéger l'environnement et assurer la sécurité publique. Les ministères peuvent également prendre des mesures pour protéger l'environnement et assurer la sécurité publique.

Un bon nombre de ministères du gouvernement fédéral dans les régions inexplorées dans leur pays ou à l'étran- ger, pour encourager et registrer des spécimens de plantes. Par l'étude des quétaines, de nouveaux sen- tiers s'ouvrent depuis quelques années, permettant la découverte de nouvelles sources alimentaires, l'amélio- ration de certaines recettes et une meilleure compréhen- sion de la productivité naturelle des terres.

Le bon nombre de ministères du gouvernement fédéral et des gouvernements provinciaux effectuent ou pa- tout au Pays. Les travaux sont variés et les botanistes exercerent leur spécialité dans les laboratoires et stations de recherches, dans les fermes expérimentales, les stations d'horticulture, les instituts de recherches et les écoles d'agriculture.

En général, le travail du botaniste consiste en une série de projets connexes ou indépendants, tous exécutés suivant les principes de recherche scientifique. Ainsi certains taxonomistes disséquent les plantes pour en identifier les parties qui montrent les effets de maladies ou d'expériences quelconques. Les morphologistes et les physiologistes examinent des préparations de tissus végétaux dont ils étudient la structure et le développement cellulaires ou la formation chromosomique. Certains expérimentent sur la croissance ou la répartition aux effets de la radiaction.

En tant que spécialisation des plantes, la botanique s'intéresse à toutes les formes de la vie végétale. Elle cherche à étendre la connaissance que d'autres sciences du monde des plantes ont sur le bien de la génération et de la survie pour le bien de l'humanité. La botanique, à l'example des autres domaines scientifiques, comprend plusieurs divisions qui englobent un bon nombre de spécialités. Les principales sont la taxe- nomie, c'est-à-dire la classification des plantes d'après leur forme végétale, et la physiologie qui a trait à et les formes végétales, et la physiologie qui a trait à l'activité et au fonctionnement des plantes.

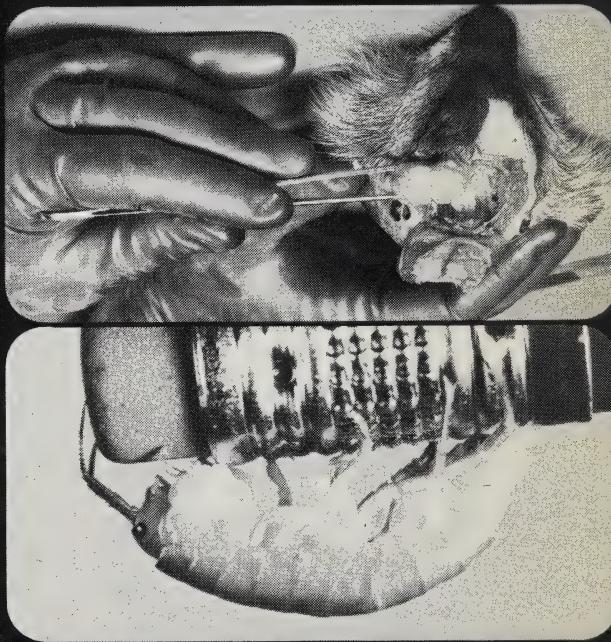
Biochimie

Biophysique

La biochimie se définit comme étant l'étude de la chimie et des procédés chimiques des matériaux vivants. Plusieurs universités canadiennes offrent un programme d'études préparant leurs futurs diplômés au travail de laboratoire pour le compte des gouvernements, des industries, des universités ou des hôpitaux. La majorité des établissements universitaires aux étudiants de postgraduate alors que certaines permettent différent le baccalauréat alors que d'autres ou médicales.

biological sciences

Universities



Liste des collèges

12

| | | |
|--------------------|---------------------------|--|
| Nouvelle-Ecosse | Terre-Neuve | Collège des Pêcheurs, navigation, génie maritime |
| | C.O.T.T. | Collège des métiers et de la technologie |
| C.F.N.M.E.E. | Saint-John's | Collège Champlain, Campus de Québec |
| Ahuntsic | Lennoxville | Collège de la Côte Nord, Campus de Sept-Îles |
| Boréale-Lauréndeau | Champlain/Québec | Collège de la Côte Nord, Campus de Baie-Comeau |
| Champlain/ | St-Lambert | Collège de Chicoletmi |
| Champlain/ | Chicoletmi | Collège de la Côte Nord, Campus de Baie-Comeau |
| Champlain/ | St-Lambert | Collège de Chicoletmi |
| Champlain/ | Longueuil | Collège de la Côte Nord, Campus de St-Lambert |
| Champlain/ | Montreal 215 | Collège de la Côte Nord, Campus de Sept-Îles |
| Champlain/ | Montreal 215 | Collège Édouard-Montpetit |
| Edouard-Montpetit | Gaspé | Collège de Gaspésie |
| François-X. | Hull | Collège de Hull |
| Garnneau | Hull | Collège John Abbott |
| John Abbott | Montreal 215 | Collège John Abbott |
| Joliette | Joliette | Collège de Joliette |
| L'Assomption | Jonquière | Collège de Jonquière |
| L'Assomption | LAPCOTIÈRE | Collège de LAPCOTIÈRE |
| Laval | Lauzon | Collège de Lauzon |
| Laval | Outaouais 3 | Collège de Limoulo |
| Laval | St-Téhére-de-Blandimville | Collège de Limoulo |
| Laval | Montreal 406 | Collège de Maisonneuve |
| Maisonneuve | Montreal 408 | Collège de Montrouge |
| Montmorency | Rivière-du-Loup | Collège de Rivière-du-Loup |
| Rivière-du-Loup | Rivière-du-Loup | Collège de Rivière-du-Loup |
| Rivière-du-Loup | Rimouski | Collège Rimouski |
| Rivière-du-Loup | Rouyn-Noranda | Collège Rouyn-Noranda |
| Rouyn-Noranda | Rouyn-Noranda | Collège Rouyn-Noranda |

Liste des universités

04

Le Québec

professionnel (BILL 21). Notons cependant qu'il y a également des institutions privées qui donnent des cours de niveau collégial reconnaissables à la DIGEC.

Il faut noter aussi que ces structures sont nouvelles dans le droit scolaire et le droit administratif du Québec. Comme une commission scolaire, un collège désignement général et professionnel est une cor-

Un est pas élu directement par les parents et les combinaisons possibles sont nombreuses. Celle-ci soutient une relative autonomie. Son conseil administratif assure une large participation du milieu ambiant.

Dans sa forme actuelle, le Conseil d'administration d'un collège est composé de dix-neuf personnes provenant des groupes socio-économiques du territoire venuant du secteur des professions, parents et étudiants du milieu. Le Directeur général et le Directeur adjoint sont nommés par le conseil. Les deux autres membres sont nommés par les enseignants et les administrateurs. Enfin, le Secrétaire général du Collège agit comme secrétaire du conseil.

Secrétaire général,
Institut canadien,
Collège du Vieux-Montréal.

Nouveaux venus chez-nous et peut-être nouveaux parisiens ! L'éducation accidentnelle, les Collèges d'enseignement général et professionnel, les établissements généraux à buts privés, avec la création d'un secteur universitaire, le secondaire, le supérieur et professionnel, le système scolaire du Québec compte maintenant quatre niveaux bien distincts : l'élementaire, le secondaire, le collégial, et universitaire.

Le niveau collégial se définit comme intermédiaire entre le secondaire d'une part et l'université ou le marché du travail, d'autre part. Il est destiné à la fois aux jeunes âgés de dix-sept à trente ans, qui se dirigent vers une carrière dans un secteur du travail, et aux adultes qui veulent compléter leur formation générale ou professionnelle en fonction des exigences du marché du travail.

Le Québec et ses CÉGEP
Depuis quelques années, le Québec redéfinit ses politiques scolaires. Parmi les principales études entre-prises, signales-t-on à titre d'exemple, les travaux de la Commission d'enquête Parent sur l'éducation générale ainsi que ceux de la Commission d'enquête Rioux sur l'éducation artistique. Plus près de nous encore, d'autres projets d'envergure, traitant surtout de l'éduca-tion parallèle sont mis sur pied (assisation pressager nouvelle intérèse).

Un collège d'enseignement général est professionnel, est une institution dont la fonction est de dispenser, pour un territoire donné, les enseignements volontaires qui relèvent dans le domaine des techniques d'éducation et de formation aux établissements d'enseignement secondaire, aux instituts d'enseignement technique et aux établissements d'enseignement supérieur. Les enseignements volontaires sont coordonnés par la Direction régionale des enseignements, qui détermine les programmes et les méthodes d'enseignement, et qui assure la supervision et l'évaluation de l'enseignement. Ces enseignements sont coordonnés par la Direction régionale des enseignements, qui détermine les programmes et les méthodes d'enseignement, et qui assure la supervision et l'évaluation de l'enseignement.

A.D. Dunton,
Président et vice-chancelier,

les esprits en quête de savoir.
universités sont autant de collectivités fascinantes pour
assureront pas une tâche facile, et c'est pourquoi les
soit milieu et de le préparer à l'avenir. Ce n'est
celui du monde dans lequel il évolue. Les universités doivent à
simple pédagogie, une surcorrection. L'université doit
neuve d'une carrière devient être repositionnée sous le
considérations antérieures formulées quant à la parti-
formation universitaire doit préparer uniquement à
dérouler une vie, même si je prends pas que la
il démarre que,

tres formes d'action peuvent convaincre.
seulement de leur vie, d'autres établissements ou d'autre-
culière ou partiale, même pour un certain temps
s'orienter plus directement vers une formation parti-
l'homme, la société et la nature. A ceux qui veulent
l'autre des branches de servir pour mieux comprendre
précision, le processus de l'intelligence de l'une ou
ou à ceux qui veulent créer et approfondir avec
frontier et de traiter des pensées et des idées abstraites
matique de leurs aptitudes pour leur permettre d'affir-
à ceux qui veulent tirer profit du développement systé-
à diverses formes de ressources et les occasions
d'avenir le rôle que devront jouer les universités. Aussi,
placé en évolution; et c'est bien ainsi que je vois à
C'est ainsi qu'il doit en être dans notre monde com-

peuvent servir à atténuer les fins qu'ils poursuivent.
de changer les établissements ou les modalités qui

1 après-guerre, semblerait indiquer que les jeunes qui pourraient s'y inscrire songent à faire autre chose. Ce qui me semble de bonne guerre.

question relevait de l'université; de même ne puis-je prétendre qu'une formation universitaire ouvre la porte à une situation.

La diffusion d'un université, à trois voies, sera à ce propos
évidemment l'occasion d'acquérir une bonne culture
dans la discipline qui se conforme à leur intérêt et leur
aptitudes; aussi, tenant compte de l'avvenir, l'université
doit-elle offrir l'occasion de bien se préparer à réussir
dans une carrière appropriée.

demande de l'université; de même ne pose-t-il pas la question relative à une formation universitaire ouverte à une situation.

La diffusion d'un université, à trois voies, sera à ce propos
évidemment l'occasion d'acquérir une bonne culture
dans la discipline qui se conforme à leur intérêt et leur
aptitudes; aussi, tenant compte de l'avvenir, l'université
doit-elle offrir l'occasion de bien se préparer à réussir
dans une carrière appropriée.

Ces publications, disponibles en français et en anglais, sont destinées aux universitaires, aux chercheurs et aux étudiants du Canada, sur le campus ou ailleurs.

3. Nouveaux diplômes d'université - autre et demande
4. Demande et salaires initiaux moyens -diplômes des universités
5. Demande et salaires initiaux moyens -diplômes des collèges

Le ministère traîche en effet une promesse faite à l'amélioration des services qu'il peut rendre à la jeunesse, parmi lesquels se trouve la publication de nombreux ouvrages qui faciliteront aux jeunes la recherche d'emploi convenable.

Ces publications sont destinées à l'usage des con- selliers en main-d'œuvre, aux agents de placement et à tout sur le marché du travail, sur les salaires intérieurs aux étudiants; elles renferment des renseignements aux étudiants, elles renferment des renseignements aux nombreux diplômes, sur les emplois qui offrent la demande de nouvelles professions, sur l'offre et la demande de diplômes d'établissements du secondaire supérieur et, de même assurement, sur les carrières en général.

Voici le titre des principales ouvertures:

1. Perspectives de carrières: Universités

2. Perspectives de carrières: Collèges

services. Grâce à des entrevues, ils peuvent orienter les étudiants vers une certaine profession pour ensuite les aider à trouver un emploi à temps partiel, un emploi minimum, ou encore un emploi à temps ou, encore mieux, un emploi permanent sur le campus des études supérieures ou, ac- cordant sur le campus les employeurs au plus près de la population. Les bureaux du campus mettent à la disposition des étudiants, le nom et l'adresse des employeurs qui ne tiennent pas d'entreprises sur les campus. Ils proposent également à ces mêmes étudiants des services de placement supplémentaire qui améliorent leurs chances de trouver du travail.

En conséquence, à leur sujet dès le début de l'année scolaire de l'agence à disposer de beaucoup de temps pour faire des demandes appropriées, avant de décrocher le diplôme.

Aux bureaux de placement viennent s'ajouter des bureaux de conseils professionnels qui renseignent sur un grand nombre de perspectives de carrière. Ainsi peut-on aider l'étudiant à connaître les possibilités qu'offrent des carrières aussi nombreuses que variées. Et tout cela avant même qu'il quitte l'établissement ou poursuit ses études.

Le résultat de l'application de la méthode de mesure de la charge de travail est une évaluation des besoins en personnel et une prévision de la disponibilité de l'effectif.

La plupart des établissements post-secondaires placent à la disposition des élèves des services de conseil et de placement professionnels. Les employés et l'équipe-ment de tels bureaux, dans la majorité des cas, viennent de l'université de la Main-d'œuvre, cependant que d'autres établissements ont eux-mêmes institué de semblables services dont le travail s'exécute en trois étapes. La première vise à dresser un curriculum vitae complet, à la suite d'entrevues qui débouchent sur le placement des employés et la troisième est centrée sur le campus. La dernière étape consiste en des entrevues qui débouchent sur le travail employer. C'est pour répondre à un tel besoin de la jeunesse canadienne que les « bureaux quellifie dans ces domaines. Ce sont les deux dernières techniques, accrout aussi la demande de personnel et techniciens. A mesure qu'augmentent les exigences professionnelles de placement étudiant» procliguent de nombreux

Le conseil professionnel et les services de placement professionnel aux étudiants Note sociale, se proéoccupant des vétérabiles problèmes de la jeunesse, consacre des sommes très élevées à l'éducation et au développement physique des jeunes. Ces sommes sont utilisées pour assurer l'enseignement dans les établissements d'enseignement secondaire et supérieur, pour l'entretien et l'aménagement des terrains de sport, pour l'achat et l'entretien des équipements sportifs, pour l'organisation des compétitions sportives, pour l'assistance aux étudiants en difficulté financière, etc.

Les taux pour les étudiants détenteurs d'un baccalauréat général ou avec spécialisation sont donc pour les diplômes en arts et en sciences, alors qu'un seul taux est donné pour les étudiants ayant obtenu un baccalaureat universitaire en génie, en commerce ou administration des affaires en une des autres disciplines. Les chiffres inscrits sous l'année 1971 sont relativement pour l'année 1972 si son estimation.

Certains individus touchent des salaires initiaux sensiblement différents de ceux inscrits dans les tableaux comme différences résultant souvent de certains facteurs comme diplômes et du lieu géographique où s'exerce l'emploi. Les particuliers des employeurs ou des nou-
veaux diplômes et du lieu géographique où s'exerce l'emploi.

TRAIEMENT INITIAL DE DIPLOMES D'UNIVERSITES DE 1971 ET 1972

| DISCIPLINES | (Dollars: par mois) | ETUDES SUPERIEURES | BACCALAUREAT | GENERAL | AVEC SPECIALISATION | Maitrise | Doctoretat | 1971 | 1972 | 1971 | 1972 | 1971 | 1972 | | | | | |
|-------------------------|---------------------|--------------------|--------------|---------|---------------------|----------|------------|------|------|------|------|------|------|------|-----|------|------|------|
| Tous les diplomes | 535 | 570 | 580 | 610 | 725 | 750 | 955 | 980 | 1065 | 540 | 590 | 600 | 625 | 6740 | 750 | 950 | 970 | 975 |
| Economique | 550 | 595 | 600 | 625 | 740 | 750 | 1040 | 1060 | 1065 | 520 | 570 | 580 | 620 | 675 | 720 | 920 | 920 | 925 |
| Geographie | 540 | 590 | 590 | 600 | 600 | 600 | 920 | 920 | 920 | — | 540 | 570 | 620 | 640 | 675 | 720 | 920 | 920 |
| Histoire | 520 | — | — | — | 570 | 620 | 680 | 680 | 680 | — | 520 | 620 | 620 | 640 | 675 | 720 | 920 | 920 |
| Relations industrielles | — | — | — | — | — | 580 | 650 | 680 | 700 | 720 | — | 540 | 570 | 620 | 640 | 675 | 720 | 920 |
| Sociologie | 565 | — | — | — | — | 565 | 635 | 635 | 635 | 635 | 565 | 545 | 510 | 565 | 775 | 785 | 925 | 925 |
| Psychologie | 505 | 545 | 545 | 570 | 620 | 620 | 680 | 680 | 680 | 680 | 505 | 520 | 570 | 640 | 675 | 720 | 920 | 920 |
| Langues et litterature | 520 | — | — | — | — | — | — | — | — | — | 520 | 620 | 620 | 640 | 675 | 720 | 920 | 920 |
| Sciences politiques | 540 | — | — | — | — | — | — | — | — | — | 540 | 570 | 620 | 640 | 675 | 720 | 920 | 920 |
| Historie | 520 | — | — | — | 570 | 620 | 680 | 680 | 680 | 720 | 520 | 570 | 620 | 640 | 675 | 720 | 920 | 920 |
| Tous les diplomes | 600 | 615 | 655 | 675 | 740 | 750 | 940 | 955 | 955 | 600 | 615 | 655 | 675 | 740 | 750 | 940 | 955 | 955 |
| Chimie | 655 | 635 | 695 | 700 | 815 | — | 955 | 950 | 950 | 650 | 690 | 685 | 700 | 775 | 780 | 930 | 980 | 980 |
| Géologie | 650 | 690 | 690 | 685 | 700 | 700 | — | — | — | 605 | 625 | 630 | 635 | 685 | 690 | — | — | — |
| Geophysique | — | — | — | — | — | — | — | — | — | 610 | 635 | 650 | 850 | 895 | 950 | 1110 | 1185 | 1185 |
| Information | 605 | 605 | 630 | 650 | 690 | — | — | — | — | 620 | 645 | 645 | 775 | 780 | 860 | 980 | 1030 | 1030 |
| Genie | 680 | 700 | 700 | 775 | 780 | 980 | 980 | 980 | 980 | 680 | 700 | 700 | 775 | 780 | 860 | 980 | 1030 | 1030 |
| Tous les diplomes | 680 | 700 | 700 | 775 | 780 | 980 | 980 | 980 | 980 | 680 | 700 | 700 | 775 | 780 | 860 | 980 | 1030 | 1030 |
| Genie chimique | 620 | 655 | 655 | 760 | 760 | 1030 | 1030 | 1030 | 1030 | 620 | 655 | 655 | 760 | 785 | 800 | 950 | 1000 | 1000 |
| Genie civil | 690 | 690 | 695 | 760 | 760 | 1030 | 1030 | 1030 | 1030 | 690 | 690 | 695 | 760 | 785 | 800 | 950 | 1000 | 1000 |
| Genie mécanique | 685 | 700 | 700 | 775 | 780 | 950 | 950 | 950 | 950 | 685 | 700 | 700 | 775 | 780 | 950 | 995 | 1040 | 1040 |
| Genie électrique | 685 | 700 | 700 | 775 | 780 | 950 | 950 | 950 | 950 | 685 | 700 | 700 | 775 | 780 | 950 | 995 | 1040 | 1040 |
| Genie métallurgique | 685 | 700 | 700 | 775 | 780 | 950 | 950 | 950 | 950 | 685 | 700 | 700 | 775 | 780 | 950 | 995 | 1040 | 1040 |
| Genie minier | 735 | 730 | 730 | — | — | — | — | — | — | 735 | 730 | 730 | 735 | 735 | 735 | — | — | — |
| Autres disciplines | 600 | 630 | 645 | 755 | 980 | 980 | 1030 | 1030 | 1030 | 600 | 630 | 645 | 755 | 980 | 980 | 1030 | 1030 | 1030 |
| Agriculture | 680 | 690 | 695 | — | — | — | — | — | — | 680 | 690 | 695 | — | — | — | — | — | — |
| Bibliothéconomie | 685 | 690 | 695 | 715 | 710 | — | — | — | — | 685 | 690 | 695 | 715 | 710 | — | — | — | — |
| Droit (clercs) | — | — | — | — | — | — | — | — | — | 435 | 425 | 425 | 425 | 425 | 425 | — | — | — |
| Education physique | — | — | — | — | — | — | — | — | — | 650 | 670 | 670 | 670 | 670 | 670 | — | — | — |
| Enseignement physique | — | — | — | — | — | — | — | — | — | 685 | 750 | 750 | 750 | 750 | 750 | — | — | — |
| Enseignement | — | — | — | — | — | — | — | — | — | 775 | 790 | 790 | 790 | 790 | 790 | — | — | — |
| Hygiène sociale | — | — | — | — | — | — | — | — | — | 590 | 605 | 605 | 605 | 605 | 605 | — | — | — |
| Sciences domestiques | — | — | — | — | — | — | — | — | — | 640 | 640 | 640 | 640 | 640 | 640 | — | — | — |
| Service social | — | — | — | — | — | — | — | — | — | 665 | 700 | 700 | 700 | 700 | 700 | — | — | — |
| Sciences éducatives | — | — | — | — | — | — | — | — | — | 640 | 680 | 680 | 680 | 680 | 680 | 1065 | 1155 | 1155 |
| Sciences de l'éducation | — | — | — | — | — | — | — | — | — | 775 | 790 | 790 | 790 | 790 | 790 | — | — | — |
| Pharmacie | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| Nursing | — | — | — | — | — | — | — | — | — | 815 | 835 | 835 | 835 | 835 | 835 | — | — | — |
| Droit | — | — | — | — | — | — | — | — | — | 750 | 760 | 760 | 760 | 760 | 760 | — | — | — |
| Architecte | — | — | — | — | — | — | — | — | — | 685 | 695 | 695 | 695 | 695 | 695 | — | — | — |
| Agroculture | — | — | — | — | — | — | — | — | — | 680 | 690 | 690 | 690 | 690 | 690 | — | — | — |
| Tous les diplomes | 680 | 700 | 700 | 775 | 780 | 980 | 980 | 980 | 980 | 680 | 690 | 695 | 715 | 710 | — | — | — | — |

*Comprend les B.A. et les B.Sc. avec une formation pédagogique unique.

Pendant l'été de 1971, les étudiants des universités ont travaillé une semaine de plus que les années précédentes. Le graphique suivant démontre la moyenne de salaire et les éparages des étudiants pour cette période.

| SALARIES | | MOYENS | | LES ÉPARAGES | |
|----------------|------|--------|------|--------------|-----|
| Provinces | | Hom. | Fem. | Total | |
| Île-du-Prince- | | mes | mes | mes | mes |
| Édouard | 940 | 560 | 785 | 320 | 305 |
| Nouveau- | | | | | |
| Brunswick | 1050 | 665 | 865 | 525 | 360 |
| Nouvelle- | | | | | |
| Ecosse | 1000 | 655 | 865 | 515 | 465 |
| Terre-Nouvelle | 810 | 620 | 750 | 335 | 235 |
| Québec | 1090 | 775 | 995 | 555 | 435 |
| Ontario | 1300 | 745 | 1110 | 700 | 460 |
| Manitoba | 1360 | 795 | 1145 | 645 | 410 |
| Saskatchewan | 1395 | 720 | 1155 | 690 | 455 |
| Alberta | 1625 | 830 | 1340 | 750 | 445 |
| Colombie | | | | | |
| Brithannique | 1570 | 880 | 1330 | 920 | 535 |

| Provinces | Hom. | Fem. | Total |
|----------------|------|------|-------|------|------|-------|------|------|-------|------|------|-------|
| Île-du-Prince- | | | | | | | | | | | | |
| Édouard | 940 | 560 | 785 | 320 | 305 | 315 | 625 | 380 | 920 | 535 | 785 | 1250 |
| Nouveau- | | | | | | | | | | | | |
| Brunswick | 1050 | 665 | 865 | 525 | 360 | 315 | 730 | 310 | 1070 | 605 | 635 | 965 |
| Nouvelle- | | | | | | | | | | | | |
| Ecosse | 1000 | 655 | 865 | 515 | 405 | 475 | 705 | 310 | 1070 | 605 | 635 | 965 |
| Terre-Nouvelle | 810 | 620 | 750 | 335 | 235 | 305 | 620 | 225 | 920 | 440 | 475 | 770 |
| Québec | 1090 | 775 | 995 | 555 | 435 | 520 | 770 | 330 | 1070 | 605 | 635 | 965 |
| Ontario | 1300 | 745 | 1110 | 645 | 410 | 555 | 1360 | 255 | 1070 | 605 | 635 | 965 |
| Manitoba | 1360 | 795 | 1145 | 645 | 410 | 555 | 1395 | 265 | 1070 | 605 | 635 | 965 |
| Saskatchewan | 1395 | 720 | 1155 | 690 | 455 | 605 | 1625 | 225 | 1070 | 605 | 635 | 965 |
| Alberta | 1625 | 830 | 1340 | 750 | 445 | 640 | 1625 | 255 | 1070 | 605 | 635 | 965 |
| Colombie | | | | | | | | | | | | |
| Brithannique | 1570 | 880 | 1330 | 920 | 535 | 785 | | | | | | |

| PROVINCES | SALARIE MOYEN | Montant de l'épargne | Hommes | Femmes | Total | Hommes | Femmes | Total |
|-----------|---------------|----------------------|--------|--------|-------|--------|--------|-------|
| T.-N. | 785 | 400 | 590 | 225 | 170 | 215 | 725 | 315 |
| N.-B. | 685 | 530 | 635 | 225 | 315 | 255 | 405 | 325 |
| N.-E. | 640 | 400 | 590 | 225 | 170 | 215 | 725 | 315 |
| SASK. | 805 | 510 | 920 | 440 | 255 | 330 | 440 | 245 |
| ONT. | 1030 | 495 | 920 | 360 | 225 | 315 | 495 | 265 |
| QUE. | 705 | 485 | 625 | 360 | 255 | 325 | 405 | 295 |
| C.B. | 1250 | 635 | 920 | 335 | 225 | 315 | 605 | 335 |
| ALB. | 965 | 635 | 920 | 330 | 225 | 315 | 410 | 245 |
| MAN. | 805 | 495 | 920 | 360 | 225 | 315 | 495 | 265 |
| SASK. | 770 | 440 | 920 | 330 | 225 | 315 | 440 | 245 |
| ONT. | 1030 | 495 | 920 | 360 | 225 | 315 | 495 | 265 |
| QUE. | 705 | 485 | 625 | 360 | 255 | 325 | 405 | 295 |
| C.B. | 1250 | 635 | 920 | 335 | 225 | 315 | 605 | 335 |

Depuis quelques années, un grand nombre d'étudiants régulière de la période estivale du Canada. Depuis 1971, deux institutions post-secondaires qui cherchent à emploier des étudiants pour l'été, l'Université de Montréal et l'Université de Sherbrooke, ont obtenu un poste permanent à la fin des études. L'étude et les institutions post-secondaires qui cherchent à emploier des étudiants pour l'été, qui est directement relié aux études de l'école secondaire, ont obtenu un poste permanent à la fin des études. Ces deux institutions ont obtenu un poste permanent à la fin des études de l'école secondaire, qui est directement relié aux études de l'école secondaire.

En effet, en 1971 le Québec et les régions de l'Atlantique possédaient le plus grand nombre d'étudiants sans travail. En effet, en 1971 le Québec et les régions de l'Atlantique possédaient le plus grand nombre d'étudiants sans travail. Ces disparités sont l'objet de programmes de recherche du gouvernement fédéral qui contribuent à éliminer ces différences intergénérales.

Pour ce qui est de l'été 1971 les élèves des collèges et cégeps ont travaillé en moyenne onze semaines. Ces chiffres servent de bon indicateur des travailleurs. Ces chiffres démontrent que les élèves des collèges qui travaillent pendant l'été sont meilleurs que ceux qui travaillent pendant l'hiver.

Le tableau ci-dessous démontre le salaire moyen et les éparages qu'il offre aux étudiants des collèges qui travaillent pendant l'été. Ces chiffres démontrent que les élèves des collèges qui travaillent pendant l'été sont meilleurs que ceux qui travaillent pendant l'hiver.

Le graphique suivant démontre la relation qui existe entre l'obtention d'un emploi et l'obtention d'un poste permanent. Les deux courbes théoriques et est un avantage sur le marché du travail.

internat des Prêtres en vertu du Régime canadien de l'Etat aux étudiants. Il y auront accès par l'entremise des ministères provinciaux de l'Education et des ministères municipaux. L'Etat paiera les dépenses à ce service. L'élève trouvera dans la liste suivante l'adresse du bureau avec lequel il doit communiquer.

Instituté un programme d'aide aux étudiants. A cela viennent s'ajouter les bourses d'études supérieures, les bourses de perfectionnement, les subventions et autres prix, assorties d'avantages qui encouragent la poursuite d'études universitaires pour tout étudiant canadien qui le désire. Les étudiants peuvent aussi ob-

Matières
Table des

Robert Andras,

Conway

Vous savez sans nul doute qu'à l'heure actuelle, un diplôme universitaire n'est plus un passeport pour le monde du travail. Toutefois, ce n'est pas une raison pour abandonner, plutôt que de s'efforcer d'élever toujours son niveau d'instruction. En fait, la rapidité de l'évolution technologique et la croissance de notre population active qui est la plus rapide en comparaison de celle des autres pays industrielles du monde occidental, ce qui a créé plus de nécessité pour vous, les jeunes, de poursuivre des études supérieures au-delà de l'école secondaire. Il ne fait aucun doute que les candidats ayant de grandes compétences seront les mieux placés pour obtenir un emploi remunerateur qui répondre à leurs aptitudes.

Deux niveaux d'enseignement supérieur sont à la portée de tous: ceux qui offrent les universités et les collèges communautaires. Ils se sont développées rapidement au cours des dernières années et ils offrent une vaste gamme de cours prévus en fonction des besoins actuels et futurs d'un marché du travail en pleine expansion. Les employeurs ont une grande considération pour les diplômés de ces établissements.

Ainsi, les perspectives de carrières sont nombreuses. Cette brochure vous fournit tous les renseignements à ce sujet. Son but est de vous signaler tous les débouchés qui vous sont offerts grâce aux universités aux collèges communautaires et elle vous aidera à prendre une décision déterminante.

DU MINISTRE UN MESSAGE

MP 32, 29 - 1973
Ottawa, 1973
Information Canada
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Main-d'œuvre Manpower et immigration
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